

# HEALTH AND SAFETY PLAN

## TEST PIT EXCAVATION, GEOPROBE BORING AND MONITORING WELL INSTALLATION

EPA Region 5 Records Ctr.



323737

DETREX CORPORATION

1100 STATE ROAD

ASHTABULA, OHIO

September 2006

**URS**

1375 Euclid Avenue, Suite 600  
Cleveland, Ohio 44115  
216-622-2400

## LETTER OF TRANSMITTAL

ARCHITECTS @ ENGINEERS @ PLANNERS  
 1375 EUCLID AVENUE  
 CLEVELAND, OHIO 44113  
 (216) 622-2400  
 FAX (216) 622-2428

**TO:** United States EPA  
 Office of Superfund, Region V, SR-6J  
 77 West Jackson Boulevard  
 Chicago, IL 60604-3590  
**ATTN:** Ms. Terese VanDonsel

**DATE:** September 11, 2006  
**PROJECT:** Test Pit Excavation, Geoprobe, Boring and  
 Monitoring Well Installation  
**JOB NO.:** 13811443.06610  
**RE:** H&S Plan  
**PROJ. MGR.:** Martin Schmidt

**Ladies/Gentlemen:**

**We are sending you the following items:**      **X Attached**      **Under Separate Cover**

\_\_\_ Shop Drawings      \_\_\_ Drawings (Prints)      \_\_\_ Proposal Request      \_\_\_ Copy of Letter  
 \_\_\_ Product Data      \_\_\_ Project Manual      \_\_\_ Change Order      \_\_\_ Computer Media  
 \_\_\_ Samples      \_\_\_ Tracings      \_\_\_ Technical Spec      **X Other**

Copies	Date	Description	Disp.
1	September 2006	H&S Plan for Detrex Corporation Project (listed above)	3

These are transmitted for the following disposition:

- |                                 |                           |                      |           |
|---------------------------------|---------------------------|----------------------|-----------|
| 1. For Your Approval            | 4. For Review and Comment | 7. Conforms As Is    | 10. Other |
| 2. For Your Use and Information | 5. For Bidding            | 8. Conforms As Noted |           |
| 3. As Requested                 | 6. For Construction       | 9. Does Not Conform  |           |

**Note: Drawings and Specifications shall not be used for construction unless noted: "For Construction".**

Remarks:

Copies to: project file

Signed: \_\_\_\_\_

# TABLE OF CONTENTS

---

Notice .....	N-1
Section 1 <b>Introduction</b> .....	1-1
Section 2 <b>TWO Background</b> .....	2-1
2.1     Historical Background .....	2-1
2.2     Site Description And Corrective Measures.....	2-1
2.3     Site Activities.....	2-1
Section 3 <b>Responsibilities</b> .....	3-1
3.1     Project Manager (Jim Anderson) .....	3-1
3.2     Site Safety Officer (Michael Koss, Jeff Berk) .....	3-2
3.3     Regional Health And Safety Manager (Cece Weldon, CHMM, ASP).....	3-2
3.4     Project Personnel (Michael Koss, Jeff Berk) .....	3-3
3.5     Subcontractor's Safety Representative .....	3-3
Section 4 <b>Site Map</b> .....	4-1
Section 5 <b>Hazard Analysis</b> .....	5-1
5.1     Chemical Hazards .....	5-1
5.1.1     Hazard Communication Materials .....	5-2
5.2     Control of Exposure to Chemicals Hazards.....	5-2
5.3     Physical Hazards .....	5-3
5.3.1     Heat Stress Recognition and Control .....	5-3
5.3.2     Cold Stress Recognition and Control.....	5-3
5.3.3     Noise Hazards .....	5-4
5.3.4     Slip/Trip/Fall Hazards.....	5-4
5.3.5     Heavy Equipment.....	5-5
5.3.6     Underground and Aboveground Utilities.....	5-5
5.3.7     Lifting Hazards .....	5-6
5.3.8     Animal Bites .....	5-7
5.3.9     Use of Personal Protective Equipment .....	5-7
5.3.10     Work Zone Traffic Control .....	5-7
5.3.11     Corrosive and Reactive Materials .....	5-7
5.3.12     Drilling Safety Guidelines .....	5-7
5.3.13     Electrical Safety .....	5-8
5.3.14     Flammable Hazards .....	5-8
5.3.15     DOT Shipping.....	5-9
5.3.16     Site Access and Special Hazards .....	5-9
5.3.17     Vehicle Safety Program .....	5-9

# TABLE OF CONTENTS

---

	5.3.18 Trenching and Excavation .....	5-9
<b>Section 6</b>	<b>Air Quality Monitoring and Mitigative Measures for Control of Emissions .....</b>	<b>6-1</b>
6.1	Chemical Exposure Monitoring .....	6-1
6.1.1	Personal Exposure Monitoring .....	6-1
6.2	Background Readings .....	6-1
6.3	Data Logging.....	6-2
6.4	Air Quality Monitoring Instrumentation And Techniques.....	6-2
6.5	Work Stoppage Responses.....	6-2
6.6	Calibration Of Air Monitoring Equipment .....	6-2
6.7	Mitigative Measures For Control Of Emissions .....	6-3
6.8	Dust Control.....	6-3
<b>Section 7</b>	<b>Personal Protection.....</b>	<b>7-1</b>
7.1	Personal Protective Equipment Use.....	7-1
7.2	Limitations of Protective Clothing.....	7-1
7.3	Duration of Work Tasks.....	7-2
7.4	Personal Protective Equipment Selection .....	7-2
<b>Section 8</b>	<b>Respiratory Protection.....</b>	<b>8-1</b>
8.1	Respirator Selection .....	8-1
8.2	Medical Screening.....	8-1
8.3	Fit Testing .....	8-1
8.4	Respirator Use Instruction .....	8-2
8.5	Respirator Inspection .....	8-2
8.6	Cleaning of Respirators.....	8-3
8.7	Maintenance of Respirators .....	8-4
8.8	Storage of Respirators .....	8-4
8.9	Additional Information .....	8-4
<b>Section 9</b>	<b>Site Control .....</b>	<b>9-1</b>
9.1	General .....	9-1
9.2	Work Zones.....	9-1
<b>Section 10</b>	<b>Decontamination Procedures.....</b>	<b>10-1</b>
10.1	Sanitation .....	10-1
10.2	Decontamination – Medical Emergencies .....	10-2
10.3	Decontamination of Tools.....	10-2
<b>Section 11</b>	<b>Safe Work Practices .....</b>	<b>11-1</b>
11.1	General .....	11-1

# TABLE OF CONTENTS

---

	11.2	Sampling Practices .....	11-2
	11.3	Sample Shipment/Hazardous Materials Shipment.....	11-2
<b>Section 12</b>		<b>Emergency Response Plan .....</b>	<b>12-1</b>
	12.1	Place Of Refuge .....	12-1
	12.2	Communication.....	12-1
	12.3	Emergency Response Procedures .....	12-2
		12.3.1 Emergency Response Team .....	12-2
	12.4	Medical Emergency Response Plan .....	12-4
	12.5	Incident Report.....	12-5
	12.6	Operation Shutdown .....	12-5
	12.7	Spill Or Hazardous Materials Release .....	12-5
<b>Section 13</b>		<b>Training, Medical Surveillance &amp; Site Inspections .....</b>	<b>13-1</b>
	13.1	Training and Medical Surveillance .....	13-1
	13.2	Site Inspections .....	13-2
<b>Section 14</b>		<b>Recordkeeping.....</b>	<b>14-1</b>

# **TABLE OF CONTENTS**

---

## **Tables**

Table 7.1	Components of Personal Protection Levels
Table 9.1	Action Levels During System Improvements and Maintenance Activities
Table 12.1	Emergency Contacts

## **Figures**

Figure 1-1	Project Location Map
Figure 12	Hospital Location Map

## **Appendices**

Appendix A	Constituents of Concern for Health and Safety
Appendix B	Standard Operating Procedures and Safety Management Standards
Appendix C	Emergency Telephone Numbers and Hospital Information
Appendix D	Health and Safety Incident Report Form
Appendix E	Health and Safety Plan Compliance Agreement

# TABLE OF CONTENTS

---

## Glossary of Terms, Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
analyzer	refers to the field instrument described in Section 6.1
atm	atmosphere
°C	centigrade
Carcinogen	a substance that can cause cancer
cc	cubic centimeter
CGI	<i>Combustible Gas Indicator</i>
CM	Construction Manager
CNS	Central Nervous System
CMS	Corrective Measures Study
COC	Chemicals of Concern
DERA	Detailed Ecological Risk Assessment
eV	Electron Volts
°F	<i>Fahrenheit</i>
HHRA	Human Health Risk Assessment
HSP	Health and Safety Plan
IM	Interim Measure
kg	kilogram
LTU	Land Treatment Unit
LEL	Lower Explosive Limit
Lpm	liters per minute
MCS	Media Cleanup Standard
MSDS	Material Safety Data Sheet
m	meter
mg	milligram
mg/M <sup>3</sup>	milligrams per cubic meter
ml	milliliter
mm	millimeter
ND	not detected
NIOSH	National Institute for Occupational Safety and Health

# TABLE OF CONTENTS

---

## Glossary of Terms, Acronyms and Abbreviations

OBZ	operator's breathing zone
OEL	occupational exposure limit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
PID	Photoionization Detector
PM	Project Manager
ppb	parts per billion
ppm	parts per million
QAPP	Quality Assurance Project Plan
REL	Recommended Exposure Limit
RHSM	Regional Health and Safety Manager
SMS	Safety Management Standard
SSO	Site Safety Officer
SSR	Subcontractor's Safety Representative
STEL	Short Term Exposure Limit
SWMUs	Solid Waste Management Units
TIR	Thermal Infrared Radiation
TLV	Threshold Limit Value
TCLP	Toxicity Characteristic Leachate Procedure
UEL	Upper Explosive Limit
URS	URS Corporation and Subsidiaries
VOC	Volatile Organic Compound
VCA	Voluntary Corrective Action
WWTP	Waste Water Treatment Plant

**SITE SPECIFIC HEALTH & SAFETY PLAN**

**DETREX CORPORATION**

**1100 STATE ROAD**

**ASHTABULA, OHIO**

**SEPTEMBER 2006**

---

Myles A. Wilkinson, PE  
Health & Safety Plan Preparer

---

Date

---

James Anderson  
Project Manager

---

Date

---

Cece Weldon, CHMM, ASP  
Regional Manager of Health and Safety

---

Date

**THIS HSP IS TO BE USED FOR THE SPECIFIC PROJECT DESCRIBED HEREIN. IT IS NOT TO BE USED FOR ANY OTHER PROJECT. THIS HSP WILL BE REVIEWED AND UPDATED BY THE HEALTH AND SAFETY MANAGER A MINIMUM OF 1 YEAR FROM THE PREPARATION DATE OR AS SITE CONDITIONS OR PROJECT REQUIREMENTS CHANGE.**

This Health and Safety Plan has been prepared by URS Corporation for the purpose of aiding in the activities associated with the Detrex facility in Ashtabula, Ohio. The limited objectives of this plan, along with the evolving conditions and chemical effects on the environment and health, must be considered when evaluating this plan since subsequent facts may become known that may make this plan premature or inaccurate. Acceptance of this plan in performance of the contract under which it is prepared does not mean that the Detrex Corporation adopts the conclusions, recommendations, or other views expressed herein, which may not necessarily reflect the official position of the Detrex Corporation.

The purpose of this Health and Safety Plan (HSP) is to set forth, in an orderly and logical fashion, appropriate health and safety procedures to be followed during activities associated with activities scheduled at the Detrex Corporation. The scope of this HSP will include the methods and procedures that will be followed during soil boring activities and the installation of groundwater monitoring/remediation wells.

This document will serve not only to explain the chemical and physical hazards associated with working on the Project, but will also outline approved measures for dealing with such hazards. Air monitoring procedures for airborne contaminants are also explained in this HSP.

The procedures presented in this plan comply with the following regulatory or guidance documents:

- NIOSH/OSHA/USCG/USEPA, Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985.
- OSHA Occupational Safety and Health Standards for Hazardous Waste Operations and Emergency Response, 29 CFR 1910.120, August 22, 1994.
- Standard Operating Safety Guides, United States Environmental Protection Agency, Office of Emergency and Remedial Response, November 1984.
- USEPA Order 1440.2, Health and Safety Requirements for Employees Engaged in Field Activities, July 12, 1981.
- URS Safety Management Standards.

All personnel involved in onsite activities under this Health and Safety Plan will be required to follow the HSP protocols, as directed by the Site Safety Officer (SSO). In addition, the subcontractor(s) will be required to designate a SSO for their personnel and to follow, at a minimum, the requirements of this HSP.

All URS personnel who will be involved in intrusive activities onsite have completed the appropriate waste site worker training as required by OSHA 1910.120(e)(2), 1910.120(e)(3), and 1910.120(e)(8), as applicable, and the required medical surveillance as required by OSHA 1910.120(f). Copies of training certificates and medical surveillance certification for all URS field personnel will be maintained onsite.

## **2.1 HISTORICAL BACKGROUND**

Fields Brook (the stream itself) drains a 5.6-square-mile watershed. The eastern portion of the watershed drains Ashtabula Township and the western portion drains the eastern section of the City of Ashtabula. Fields Brook has several tributaries, including the DS, Detrex and Route 11 tributaries.

During the 1970's and early 1980's, biota, sediments and surface water samples were collected from Fields Brook and analyzed. These investigations noted the presence of a number of priority pollutant compounds in the sediment, surface water, and fish from Fields Brook and the Ashtabula River below its confluence with Fields Brook. The presence of these pollutants was attributed to past operations performed at industrial facilities located along Fields Brook. Detrex Corporation (Detrex) was one of the facilities identified as a contributor to the Fields Brook contamination. Subsequent to the findings of these investigations, Fields Brook was placed on the National Priority List (NPL) of uncontrolled hazardous waste sites.

## **2.2 SITE DESCRIPTION AND CORRECTIVE MEASURES**

During the 1980's, Detrex performed several subsurface investigations on its property to delineate areas of contamination that contributed to the contamination found in Fields Brook. These investigations indicated the presence of Dense Non-Aqueous Phase Liquids (DNAPL) located in the soil and groundwater underlying the Site.

During the 1990's, Detrex performed investigations of its property to define the areal extent of contamination and to identify remedial alternative applicable to addressing these sources of recontamination to the Fields Brook. Work conducted during the 1992 Source Control investigation at Detrex identified soil contamination, groundwater contamination, and the presence of dense, non-aqueous phase liquid (DNAPL). Work conducted in 1997 identified the presumed extent of the DNAPL layer and contaminated groundwater. Based on these investigations, it was determined that the installation of low permeability barrier wall and DNAPL collection system would protect against recontamination of Fields Brook. The low permeability barrier wall was installed during 2000. A DNAPL collection system was subsequently installed at the site.

## **2.3 SITE ACTIVITIES**

The field investigation will consist of two tasks, soil borings using a direct push and hollow-stem auger techniques, and the excavation of test trenches. Activities will take place in areas where the contaminants were found on portions of the Detrex site and surrounding properties.

### **Soil and Groundwater Sampling**

URS proposes to advance approximately fifteen (15) hollow stem auger (HSA) soil borings within the Southern Area proximal to and along the proposed interceptor trench alignment. Additionally, URS proposes to advance approximately twenty (20) direct push technology (DPT)

soil borings in the DS Tributary Area. All HSA and DPT boring activities will be performed by a pre-qualified operator (Northcoast Drilling Services of Grafton, Ohio). A qualified geologist will visually monitor the HSA and DPT operations and collect, classify and log soil samples using the United Soil Classification System (USCS) in accordance with American Society of Testing and Materials Method D2488-00 (ASTM, 2000). Per USEPA's verbal request, URS may use a backhoe and install a test trench in-place of DPT technology at various locations if access allows entry of the equipment.

HSA soil borings will be advanced using conventional drilling equipment per ASTM Method D6286-98 (ASTM, 1998). Samples will be continuously collected in 2-foot intervals using a split-barrel (split-spoon), steel sampler. The sampler will be decontaminated between sampling events with a non-phosphate soap and copious amounts of de-ionized water. The sampler will be hammered to the desired depth, and then retrieved. Upon retrieval from the sampler, the soil sample will be description and screening for volatile organic vapors. DPT soil borings will be advanced using a hydraulically-driven, direct-push equipment (truck-mounted Geoprobe® Model 5400) per ASTM Method D6282-98 (ASTM, 1998). Samples will be continuously collected in 4-foot intervals using a large-bore, dual-tube, steel sampler. The sampler will be lined with dedicated, vinyl acetate liners. The sampler will be pushed to the desired depth, and then retrieved. Upon retrieval from the sampler, the soil samples will be divided into 2-foot intervals for description and screening. The borings will be advanced to the top of the till clay unit to approximate depths ranging from 20 to 30 feet below ground surface (bgs). One soil sample from each boring with the highest field screening reading will be submitted to Firstech Environmental Laboratories of Cleveland, Ohio for laboratory analysis for Volatile Organic Compounds (VOCs) by method 8260B and Semi-Volatile Organic Compounds (SVOCs) by method 8270C.

Up to twenty-one (21) temporary monitoring wells will be installed in the designated soil borings (8 Southern Area, 13 DS Tributary Area). Monitoring well installation activities will be performed in accordance with ASTM Method D6724-01 (ASTM, 2001). The monitoring wells, in the Southern Area, will be constructed of 2-inch diameter, flush-threaded poly-vinyl chloride (PVC) pipe to depths ranging from 20 to 30 feet bgs. This depth is an estimate and the final depth will be considered based on field observations. Ten feet of 0.010-inch slotted, PVC well screen will be installed in all of the wells. A 2-foot thick, bentonite seal will be placed above the screened interval of each well and hydrated with potable water. The remainder of the annular space will be backfilled with bentonite/cement slurry. Temporary wells will be secured with a locking cap. The monitoring wells, in the DS Tributary Area, will be constructed of 1-inch diameter, flush-threaded PVC pipe to the same depth and specification above. The temporary wells in the DS Tributary Area will be secured with a threaded PVC cover.

### **Field Screening and Sample Selection**

The sample screening will be conducted on the samples contained in the plastic bags using a photoionization detector (PID) with a 10.2 eV lamp. Samples showing high concentrations of volatile organic compounds (VOCs) as determined by the field screening will be selected for laboratory analysis.

**North Sewer Scope Development and Investigation**

As requested by the Ohio EPA, URS will develop a scope of work to sample the sediment at the former discharge of the North Sewer, and install a series of five test trenches approximately 20-feet long along the former sewer pipe exposing the side of the pipe to observe the fill material and assess the pipe integrity. URS anticipates collection of three (3) sediment samples and up to ten (10) soil samples from the test trench.

Samples will be submitted to the Laboratory for VOCs, SVOCs, polychlorinated byphenols (PCBs), metals and radionuclides. Following sampling, the trenches will be backfilled with the excavated material. Upon receipt of analytical data, a brief report will be prepared.

**Well Development and Sampling**

Monitoring wells will be developed until water quality parameters are stabilized or by the removal of a maximum of 10 well-casing volumes of water with small-diameter, dedicated, high-density polyethylene (HDPE) bailers. Each well volume removed will be field-tested for temperature, pH, and conductivity using a field water quality meter. Well development will be determined to be complete when the three consecutive readings of water quality parameters have stabilized to within 10% or until a maximum of 10 well volumes are removed. Well development data will be recorded in the field log book or field development summary sheets.

Monitoring well development water will be temporarily stored in 55-gallon drums until it can be processed through the Detrex water treatment system and discharged under existing NPDES permits.

Groundwater samples will be submitted to Firstech Environmental Laboratories of Cleveland, Ohio for laboratory analysis for VOCs by method 8260 and SVOCs by method 8270.

**Laboratory Analysis**

Samples submitted for analysis will be couriered to Firstech Environmental Laboratories of Cleveland, Ohio for VOCs, SVOCs, polychlorinated byphenols (PCBs), metals and radionuclides analyses.

URS will have site safety and health oversight and coordination responsibilities for URS personnel; each subcontractor will be held accountable for the safe and healthful performance of work by each of their employees, subcontractors, or support personnel who may enter the site.

URS will strictly adhere to the provisions of this health and safety plan, along with the applicable regulations issued by governmental entities. The Project Manager (PM), Site Safety Officer (SSO) and the Regional Health and Safety Manager (RHSM) will be provided with copies of this HSP.

### **3.1 PROJECT MANAGER (JIM ANDERSON)**

The PM shall direct URS onsite operations. The PM may delegate all or part of these duties to a properly qualified URS employee. At the site, the PM, assisted by the SSO, has primary responsibility for:

- Seeing that appropriate personal protective equipment and monitoring equipment is available and properly utilized by all onsite URS employees.
- Establishing that URS personnel are aware of the provisions of this plan, are instructed in the work practices necessary to ensure safety, and are familiar with planned procedures for dealing with emergencies.
- Establishing that all URS onsite personnel have completed a minimum of 40 hours of health and safety training and have appropriate medical clearance as required by 29 CFR 1910.120, and have been fit tested for the appropriate respirators.
- Seeing that URS personnel are aware of the potential hazards associated with site operations.
- Monitoring the safety performance of all URS personnel to see that the required work practices are employed.
- Correcting any URS work practices or conditions that may result in injury or exposure to hazardous substances.
- Preparing any accident/incident reports for URS activities (URS Incident Report Form 49-1 located in Appendix D).
- Seeing to the completion of Plan Compliance Agreements by URS personnel (See Appendix E).
- Halting URS site operations, if necessary, in the event of an emergency or to correct unsafe work practices.
- Seeing that utility clearances are obtained, confirmed, and documented prior to the commencement of work.
- Seeing that the appropriate Safety Management Standards are appended to this HSP and are available on site.
- Reviewing and approving this project health and safety plan.

**3.2 SITE SAFETY OFFICER (MICHAEL KOSS, JEFF BERK)**

The Site Safety Officer's (SSO) duties may be carried out by the PM or other qualified URS site manager. The SSO is responsible for:

- Implementing project Health and Safety Plans, and reporting any deviations from the anticipated conditions described in the plan to the PM, and, if necessary, the RHSM.
- Determining that monitoring equipment is used properly by URS personnel and is calibrated in accordance with manufacturer's instructions or other standards, and that results are properly recorded and filed.
- Check with Health and Safety Representative to assure URS personnel have current HAZWOPER medical clearance and training.
- Assuming any other duties as directed by the PM or RHSM.
- Coordinating with URS Health and Safety Professional to identify URS personnel on site for whom special PPE, exposure monitoring, or work restrictions may be required.
- Conducting daily safety meetings for all site personnel in accordance with Section 13.
- Conducting daily site inspections prior to the start of each shift. All inspections must be documented (preferably in a bound field logbook).
- Providing ongoing review of the protection level needs as project work is performed, and informing the PM of the need to upgrade/downgrade protection levels as appropriate.
- Seeing that decontamination procedures described in Section 10.0 are followed by URS personnel.
- Establishing monitoring of URS personnel and recording results of exposure evaluations.
- Halting URS site operations, if necessary, in the event of an emergency or to correct unsafe work practices.
- Maintaining the visitor log.
- Posting OSHA "Safety of the Job" and other required posters at the site.

**3.3 REGIONAL HEALTH AND SAFETY MANAGER (CECE WELDON, CHMM, ASP)**

The RHSM is responsible for:

- Determining the need for and conducting periodic audits of the operation to evaluate compliance with this plan.
- Providing health and safety support as requested by the SSO and PM.
- Reviewing and giving final approval to this HSP.
- Removal and replacement of personnel working in an unsafe manner in conjunction with the PM.
- Reviewing any addendum or alterations of this HASP.

**3.4 PROJECT PERSONNEL (MICHAEL KOSS, JEFF BERK)**

Project personnel involved in onsite investigations and operations are responsible for:

- Taking all reasonable precautions to prevent injury to themselves and to their fellow employees.
- Performing only those tasks that they believe they can do safely, and immediately reporting any accidents and/or unsafe conditions to the SSO or PM.
- Implementing the procedures set forth in the Health and Safety Plan, and reporting any deviations from the procedures described in the Plan to the SSO or PM for action.
- Notifying the PM and SSO of any special medical problems (i.e., allergies) and seeing that all onsite URS personnel are aware of such problems.
- Reviewing project health and safety plan and signing Safety Plan Compliance Agreement.

**3.5 SUBCONTRACTOR'S SAFETY REPRESENTATIVE**

Each subcontractor is required to designate a Subcontractor's Safety Representative (SSR) who is the subcontractor supervisor. The SSR is responsible for the safe and healthful performance of work by his work force and subcontractors. During subcontractor activities onsite, the SSR will perform continuing work area inspections, and conduct safety meetings and safety orientations for all new employees. The SSR will attend periodic safety meetings with the SSO. The SSR will also investigate accidents and exposures involving subcontractor personnel.



## 5.1 CHEMICAL HAZARDS

Based on the investigations completed to date on the Detrex facility, a variety of organic compounds and metals have been identified in the soils, sediment and groundwater at the site that can potentially impact the Health and Safety of URS personnel. These contaminants have not been detected in the portion of the site where activities covered under this HSP will take place. These include chloroform, hexachlorobenzene (HCB), hexachlorobutadiene, polychlorinated biphenyls (PCBs), 1,1,2,2-tetrachloroethane, tetrachloroethylene (PCE), 1,1,2-trichloroethane, trichloroethylene (TCE), and vinyl chloride; Hexachlorobutadiene has a very low threshold limit value, 0.02 ppm.

- Chloroform
- Hexachlorobutadiene
- Tetrachloroethene
- 1,1,2-Trichloroethane
- 1,1,2,2-Tetrachloroethane
- Vinyl Chloride
- Trichloroethene
- 1,1-Dichloroethene
- 1,1,1-Trichloroethane
- trans-1,2-Dichloroethene
- cis-1,2-Dichloroethene
- Hexachlorobenzene
- Polychlorinated biphenyls (PCBs)
- 1,1,1,2-Tetrachloroethane

The chemicals listed above are considered the Chemicals of Concern (COCs) for the site. The hazards associated with the COCs are listed in Appendix A. The risk of exposure to these chemicals can be by ingestion, dermal, or respiratory routes, depending on the type and concentration of compounds encountered during field activities. The information contained in Appendix A was taken from the *NIOSH Pocket Guide to Chemical Hazards* (US Department of Health and Human Services, 1997). Information from alternate sources was obtained for COCs not included in the NIOSH Pocket Guide to Chemical Hazards.

From an occupational health standpoint, given that any potential exposure to site personnel will be only for a ***short period of time (intermittent for several days)***, the levels of contaminants that have been, or could be, encountered during site activities ***should not represent a significant concern*** if the provisions of this HSP are appropriately implemented. However, ***the site is still operational***, and DNAPL is present in the soil and groundwater, so the potential for exposure to elevated levels of these contaminants may exist. Overviews of the hazards associated with exposure to the chemicals that may pose a hazard during site activities are presented below in terms of the following types of occupational exposure limits:

PEL - Permissible Exposure Limit (OSHA Standard)

TLV - Threshold Limit Value (ACGIH Guidance)

REL - Recommended Exposure Limit (NIOSH Guidance)

STEL- Short Term Exposure Limit

C - Ceiling

OSHA Permissible Exposure Limits (PELs), ACGIH Threshold Limit Values (TLVs), and NIOSH Recommended Exposure Limits (RELs) are time-weighted averages (TWAs) defined as

concentrations for a normal 8-hour work day and 40-hour work week to which almost all workers can be repeatedly exposed without suffering adverse health effects

Short Term Exposure Limit (STEL) is defined as the concentration to which workers can be exposed for short time periods without irritation, tissue damage, or narcosis sufficient to likely cause impairment of self-rescue or precipitate accidental injury. The STEL is a 15-minute time-weighted average that should not be exceeded at any time during the workday. STELs are used by OSHA, ACGIH and NIOSH for chemical exposure criteria.

A ceiling value (C) is a concentration that should not be exceeded at any time in any workday. Ceiling limits are used by OSHA, ACGIH and NIOSH for chemical exposure criteria.

Skin contact with potentially contaminated materials will be minimized by the use of personal protective clothing (as described in Section 7.0). Inhalation of vapors or particulates during the site activities will be minimized by air monitoring and the use of engineering controls, and respiratory protection will be used if Action Levels described in Section 9.0 are exceeded. Ingestion of contaminated materials will be minimized by the use of appropriate personal hygiene procedures during decontamination (i.e., thoroughly washing face and hands with soap and water after leaving the work area and prior to eating or drinking; and, no eating or smoking while in work area).

### **5.1.1 Hazard Communication Materials**

Materials which are considered hazardous materials under the OSHA Hazard Communication Standard (29 CFR 1910.1200) may be used during this project. In accordance with the URS Hazard Communication Program, the MSDS for the hazardous materials will be stored at the site. The SSO will make copies of these MSDS available to any subcontractor on this project. Personnel with the potential to work with hazardous materials should be trained in accordance with URS SMS 002, *Worker Right to Know*. A copy of URS SMS 002 is included in Appendix B.

## **5.2 CONTROL OF EXPOSURE TO CHEMICALS HAZARDS**

Potential hazards will be reduced by protecting against exposures to contaminants first by engineering and administrative controls or secondly by the utilization of appropriate PPE. The engineering and administrative controls to be implemented include:

### ***Engineering Controls***

- Using remote sampling devices such as tongs or shovels to avoid contact with contaminated media.
- The use of Rotosonic drilling methods will be used to control contact with contaminated particulates.
- Having the driller collect soil samples and containing them in zip-loc bags. URS personnel will observe the soil samples contained in zip-loc bags outside of the exclusion zone.

- Large, industrial-style fans may be used to help dissipate volatile contaminants from the breathing zone during the drilling activities in the exclusion zone (e.g. drilling and well installation). These fans will be placed upwind of the work area.

### ***Administrative Controls***

- A clean work surface will be maintained to avoid contact with contaminated media.
- Distance between worker and actual contaminated area (e.g., placing of heavy equipment on clean side during certain activities to provide some measure of remoteness of the operation).
- Staying upwind from contaminant emissions.
- Ensuring only essential personnel are in work area.

PPE to protect the body against contact with known or anticipated chemical hazards are divided into five levels of protection categories (i.e. Level A, B, C, Modified D, and D) according to the degree of protection afforded. The initial levels of personal protective equipment to be used while performing the work activities described in Section 1 are discussed in Section 7, *Initial Levels of Protection*. If the PPE for any level of protection needs to be modified to be appropriate for the specific hazard encountered, an appropriate Addendum to this HASP will be prepared by the URS RHSM, and approved by the RHSM.

Levels of protection can be upgraded by the URS SSO if they are not appropriate; downgrading of PPE requires approval by the URS RHSM.

## **5.3 PHYSICAL HAZARDS**

Physical hazards at the surface range from the dangers of tripping and falling on uneven ground to those associated with the operation of heavy equipment such as cranes and backhoes. The following are physical hazards, which may be encountered during site activities.

### **5.3.1 Heat Stress Recognition and Control**

Heat stress monitoring shall commence when personnel are wearing PPE, including Nomex or Tyvek®-type coveralls, and the ambient temperature exceeds 70°F. If standard work garments (cotton coveralls) are worn, monitoring shall commence at 85°F. The URS Standard Management Standard (SMS) 018, *Heat Stress*, included in Appendix B, will be implemented to address this hazard.

### **5.3.2 Cold Stress Recognition and Control**

Protection against cold stress should be initiated when temperatures drop below 45°F.

Exposure to cold working conditions can result in cold stress (hypothermia) and/or injury (frostbite) to hands, feet, and head. Hypothermia can result when the core body temperature drops below 36°C (96.8°F). Lower body temperature will likely result in dizziness, drowsiness, disorientation, slurred speech, or loss of consciousness, with possible fatal consequences. Pain

the extremities may be the first warning of danger to cold stress. Shivering develops when the body temperature has fallen to 35°C (95°F).

Hypothermia can be brought on by exposure to cold air, immersion in cold water, or a combination of both. Wind chill factor, the cooling power of moving air, is a critical factor in cold stress.

Workers must wear adequate insulating clothing if work is performed in temperatures below 4°C (40°F). At temperatures of 2°C (35.6°F or less), workers whose clothing becomes wet should be immediately provided with a change of clothing, and if necessary, treated for hypothermia. Treatment includes warming the victim with skin-to-skin contact, or by providing warm blankets or other coverings, and drinking warm liquids. Skin exposure should not be permitted at temperatures of -32°C (-25°F) or below.

If fine work is to be performed with bare hands for more than 10-20 minutes at temperatures below 16°C (60°F), provisions should be made for keeping the workers' hands warm. If equivalent chill temperatures fall below 40°F and fine manual dexterity is not required, then gloves should be worn. Metal handles of tools should be covered with insulating material at air temperatures below -1°C (30°F).

If work is to be performed continuously in the cold when the wind chill factor is at or below -7°C (19°F), heated warming shelters (tents, trailers, vehicle cabs) should be made available nearby.

The URS Standard Management Standard (SMS) 059, *Cold Stress*, included in Appendix B, will be implemented to address this hazard.

### **5.3.3 Noise Hazards**

Previous surveys indicate that equipment used for excavations may produce continuous and impact noise at or above the action level of 85 dBA. All URS personnel within 25 feet of operating equipment, or near an operation that creates noise levels high enough to impair conversation, shall wear hearing protective devices (either muffs or plugs). URS personnel who are in the Medical Surveillance program are automatically enrolled in the URS Hearing Conservation Program and have had baseline and, where appropriate, annual audiograms. Personnel will wash their hands with soap and water prior to inserting earplugs to avoid initiating ear infections. All personnel will follow the safety guidelines outlined in URS SMS 26, *Noise and Hearing Conservation*, as provided in Appendix B.

### **5.3.4 Slip/Trip/Fall Hazards**

Workers should exercise caution when walking around the site to avoid fall and trip hazards. If there are holes or uneven terrain in the work area that could cause site personnel to fall or trip, they must be covered, flagged or marked to warn workers. The same is true of tripping hazards that may exist inside of the tunnel.

Workers should exercise caution around open excavations, such as test pits, and avoid getting closer than two feet to the edge of an unsloped excavation unless guardrails or fall protection is provided. If conditions become slippery, workers should take small steps with their feet pointed

slightly outward to decrease the probability of slipping. Gravel or sand should be spread in muddy areas to reduce slipperiness. Workers should watch where they are walking and walk only in areas of good stability. Workers should also exercise caution around open manholes and access shafts.

### **5.3.5 Heavy Equipment**

Operation of heavy equipment during site activities presents potential physical hazards to personnel. All personnel working the vicinity of heavy equipment will follow the safety guidelines outlined in URS SMS 019, *Heavy Equipment Operations*, as provided in Appendix B.

The following precautions must be observed whenever heavy equipment is in use:

- Personal protective equipment (PPE) such as steel-toed shoes, safety glasses or goggles, traffic safety vests and hard hats must be worn whenever such equipment is present.
- Personnel must at all times be aware of the location and operation of heavy equipment, and take precautions to avoid getting in the way of its operation. Never assume that the equipment operator sees you; make eye contact and use hand signals to inform the operator of your intent, particularly if you intend to work near or approach the equipment.
- Traffic safety vests ARE REQUIRED for URS personnel working near mobile heavy equipment, such as backhoes and other excavators.
- Never walk directly in back of or to the side of, heavy equipment without the operator's acknowledgment.
- When an equipment operator must operate in tight quarters, the equipment subcontractor should provide a person to assist in guiding the operator's movements.
- Keep all non-essential personnel out of the work area.
- Any heavy equipment that is used in the exclusion zone should remain in that zone until its task is completed. The equipment subcontractor should completely decontaminate such equipment in the designated equipment decontamination area as required prior to moving the equipment outside of the EZ/CRC.

### **5.3.6 Underground and Aboveground Utilities**

Prior to any excavation activity, the local Dig-Safe number will be called to request utility companies to mark their lines for all off-site locations. For all on-site locations, Detrex must provide clearance. In addition, an area inspection will be made to identify subsurface and overhead utilities through the presence of manholes, pull boxes, valve boxes, utility markers, vent risers, and the like.

The Project Manager or SSO is responsible for locating overhead and underground utilities prior to the commencement of any subsurface (> 0.3 meters (1 ft.)) activities. Resources include site plans, utility companies, and regional utility locating services. The proper utility company

personnel shall certify in writing to the Project Manager or SSO the deactivation of underground utilities, and the certification retained in the project files.

Procedures for activities proximal to utility locations are located in URS SMS 034, found in Appendix B.

Excavation, drilling, crane, or similar operations adjacent to overhead lines shall not be initiated until operations are coordinated with the utility officials. Operations adjacent to overhead lines are prohibited unless one of the following conditions is satisfied:

- Power has been shut off and positive means (e.g. lockout/tagout) have been taken to prevent lines from being energized. Wherever possible, the URS SSO will observe power shut off and place a lock and tag on the switch. In all cases utility company personnel shall certify in writing to the Project Manager or SSO the deactivation of overhead utilities, and the certification retained in the project files. The Project Manager or SSO must also attempt to verify power shut off by checking that power is no longer available to the affected building or equipment.
- Equipment, or any part of the equipment, cannot come within the following minimum clearance from energized overhead lines:

<b>Power Lines</b> <b><u>Nominal System (kv)</u></b>	<b><u>Minimum</u></b> <b><u>Required</u></b> <b><u>Clearance</u></b>
0-50	10 feet
51- 200	15 feet
201-300	20 feet
301-500	25 feet
501-750	35 feet
751-1000	45 feet

### **5.3.7 Lifting Hazards**

The following guidelines will be followed whenever lifting equipment such as portable generators, coolers filled with samples, any other objects that are of odd size or shape, or that weigh over 40 pounds. All personnel will follow the safety guidelines outlined in URS SMS 045, *Back Injury Prevention*, as provided in Appendix B.

- Get help when lifting heavy loads. Portable generators will only be lifted using a two-person lift.
- When moving heavy objects such as drums or containers, use a dolly or other means of assistance.

- Plan the lift. If lifting a heavy object, plan the route and where to place the object. In addition, plan communication signals to be used (i.e., “1,2,3, lift,” etc.)
- Wear sturdy shoes in good conditions that supply traction when performing lifts.
- Keep your back straight and head aligned during the lift and use your legs to lift the load – do not twist or bend from the waist. Keep the load in front of you – do not lift or carry objects from the side.
- Keeping the heavy part of the load close to your body will help maintain your balance.

### **5.3.8 Animal Bites**

Animals and some insects may bite and thereby pose a health hazard in the form of irritation, illness, or poisoning. Anyone bitten should be given immediate first aid as necessary, and shall be transported to the nearest medical facility. Members of the field investigation team will be properly briefed regarding the potential for encountering insects and animals. Ticks and tick-borne diseases may be of particular concern due to the location of some of the access shafts in swampy areas. The URS SMS 047, *Biological Hazards*, is included in Appendix B.

### **5.3.9 Use of Personal Protective Equipment**

The PPE which may be required for some activities (e.g., polycoated Tyvek® coveralls, waders, respirators, etc.) places a physical strain on the wearer. When PPE such as respirators, gloves, and protective clothing are worn, visibility, hearing, and manual dexterity are impaired. Refer to URS SMS 029, *Personal Protective Equipment* and URS SMS 042, *Respiratory Protection*, as provided in Appendix B.

### **5.3.10 Work Zone Traffic Control**

If URS operations require work performed on roads, highways or other areas where motor vehicles may be a hazard, all personnel will follow the safety guidelines outlined in URS SMS 032, *Work Zone Traffic Control*. A copy of URS SMS 032 is included in Appendix B.

### **5.3.11 Corrosive and Reactive Materials**

Corrosive and reactive materials may be encountered at the site. Corrosive materials may also be used in small quantities as part of the sampling efforts conducted at the site. All personnel with the potential to come in to contact with reactive or corrosive materials should follow URS SMS 009, *Corrosive and Reactive Materials*. Workers handling corrosive or reactive materials should be trained in accordance with URS SMS 002, *Worker Right to Know*. Copies of URS SMS 009 and URS SMS 002 are included in Appendix B.

### **5.3.12 Drilling Safety Guidelines**

Work activities at the Site may require the use of a drill rig or geoprobe rig. All personnel in the vicinity of the operating rig will follow the safety guidelines outlined in URS SMS 056, *Drilling*

*Safety Guidelines*, as provided in Appendix B. Prior to any excavation activity, the local Dig-Safe number will be called to request utility companies to mark their lines.

### **5.3.13 Electrical Safety**

Electrical hazards may exist at the Site. The following general precautions must be taken to prevent accidental contact with energized sources:

- Overhead lines must be identified and equipment must be kept at least 10 feet from energized lines or any other distance required by local ordinances, whichever is greater. It is important to note that power lines and hoist lines can be moved significantly by wind;
- Drill rigs shall never be moved with the mast erect;
- Underground utilities must be located before drilling or excavating begins. Appropriate utility companies must be contacted before intrusive work begins in accordance with local or state requirements for utility company notification;
- For drilling and excavation at industrial or other locations where underground utilities are owned by the client, as-built drawings of utility locations should be obtained if possible;
- As a general precaution, URS employees shall avoid contact with operating drill rigs or backhoes to reduce the risk of electrical shock should the equipment contact a power line;
- At the first sight of lightning, operations should be stopped and only resumed when conditions permit. Daily weather forecasts should be noted for predictions of electrical storms that may affect field operations.

All personnel using electrical equipment, or personnel in the vicinity of electrical equipment, will follow the safety guidelines outlined in URS SMS 12, *Electrical Safety*, as provided in Appendix B.

### **5.3.14 Flammable Hazards**

A few of the volatile chemicals expected to be present in the soil and groundwater at the site, or the vapors coming off the chemicals, are flammable or combustible. Therefore, URS SMS 14, *Fire Prevention*, and URS SMS 15, *Flammable and Combustible Liquids and Gasses*, included in Appendix B, will be implemented and the following safety precautions will be followed:

- In suspected areas of contamination where excavation or trenching activities are taking place, all non-essential engines shall be turned off. All gas or diesel powered equipment operating in these areas must be equipped with spark arrestors on the exhaust.
- Smoking will be strictly forbidden in work areas. No lighters or matches will be permitted in the investigation areas. Smoking elsewhere on the site will be in accordance with BASF policy.
- A type A-B-C fire extinguisher will be present in each work area.

### **5.3.15 DOT Shipping**

Shipping of hazardous materials may be required at the site. Hazardous materials include, but are not limited to, compressed gases, laboratory reagents, field samples, hazardous wastes and radioactive materials (i.e., Troxler nuclear gauges). Personnel involved in the shipping of materials should follow URS SMS 048, *DOT Shipping*. A copy of URS SMS 048 is included in Appendix B. Questions concerning shipping can also be directed to the URS HazMat Shipping Support Helpline at 800-381-0664.

### **5.3.16 Site Access and Special Hazards**

The Site is an active chemical plant. DNAPL is present in the soil and groundwater. As such, specific hazards, including the presence of hazardous chemicals, may be encountered. The exposure to all hazardous chemicals should be eliminated or reduced. In order to eliminate or reduce hazardous chemical exposure, URS SMS 002, *Worker Right to Know*; SMS 017, *Hazardous Waste Operations*; and URS SMS 004, *Accessing Industrial Sites* should be followed by all URS personnel on-site. Copies of URS SMS 002, 004 and 017 are included in Appendix B.

Toxic and carcinogenic compounds are also present at the site. URS has developed SMS 050, *Specific Chemical Hazard* to specifically address toxic and carcinogenic compounds. A copy of URS SMS 050 is included in Appendix B. If exposure to these toxic or carcinogenic compounds is suspected, the Project Manager may request Personal Monitoring or Project Specific Medical Examination. A description of the Personal Monitoring and the purpose and scope of this exam is found in URS SMS 043, *Personal Monitoring (Industrial Hygiene)* and URS SMS 024, *Medical Screening & Surveillance*. Copies of URS SMS 043 and 024 are included in Appendix B.

### **5.3.17 Vehicle Safety Program**

URS personnel operating motor vehicles that are owned, rented or leased by URS, and personnel using personal vehicles on company time must comply with URS SMS 57, *Vehicle Safety Program*. All URS personnel operating motor vehicles on company time are required to complete the 0.5-hour on-line defensive driving training module.

### **5.3.18 Trenching and Excavation**

Physical hazards can arise from excavation and other earthwork activities. The possibility of cave-ins of excavations must be considered. Hazards encountered while working on or around heavy equipment must also be considered. All OSHA regulations for excavation (including OSHA Regulations 29 CFR 1926 Subpart P) are to be followed throughout this project. All personnel working in the vicinity of the excavation will follow the safety guidelines outlined in URS SMS 013, *Excavation Safety*, as provided in Appendix B.

If URS personnel or subcontractors need to peer into the excavation or measure the dimensions of the excavation, URS personnel and subcontractors will be responsible for evaluating the stability of the edges of the excavations for their work purposes only.

Excavations at the site deeper than 4-feet will be considered Permit-Required Confined Spaces. URS personnel will **not** enter Confined Spaces at the site.

## **SECTION SIX    Air Quality Monitoring and Mitigative Measures for Control of Emissions**

---

### **6.1 CHEMICAL EXPOSURE MONITORING**

The field instrumentation described in this health and safety plan has been specifically selected for the contaminants that may be reasonably anticipated to be encountered during this course of this project. Selection factors include anticipated airborne concentrations, potential interference, ionization potentials, instrument sensitivity, and occupational exposure limits. The Action Levels specified in Table 9.1 were established with the expectation that specific instruments will be used. **DO NOT SUBSTITUTE INSTRUMENTS WITHOUT THE CONSENT OF THE REGIONAL HEALTH AND SAFETY MANAGER.**

The monitoring equipment specified in Section 6.4 will be used on a regular basis to evaluate the potential for exposure to airborne contaminants, typically every ten to fifteen minutes. Monitoring will be conducted in the immediate vicinity of the contaminant source point or work area. If readings exceed the first Action Level (> 1 ppm for more than one minute), monitoring in the operator's breathing zone (OBZ) of the person working nearest the point of operations/contaminant source will start immediately, and site personnel will evacuate the work area.

Readings above the first Action Level will require personnel to upgrade to evacuate the work area. The Action Levels and Responses are detailed in Table 9.1.

#### **6.1.1 Personal Exposure Monitoring**

In accordance with 29 CFR 1910.120(h), a URS industrial hygienist may perform quantitative personal monitoring on personnel at greatest risk of exposure (i.e., those working in the exclusion zone). The industrial hygienist will determine who to sample based upon site conditions at the time of the sampling. A laboratory accredited by the American Industrial Hygiene Association will perform analyses, and results will be reported and records maintained in accordance with OSHA criteria.

Procedures for personal monitoring are located in Safety Management Standard 43, *Personal Monitoring*, a copy of which is included in Appendix B.

### **6.2 BACKGROUND READINGS**

All direct-reading instrument readings will be evaluated relative to background reading, not "meter zero". Prior to the start of work at each shift, instrument readings will be obtained outside of the work zone in order to determine the level of "background" readings. Site readings will be evaluated against these background readings (i.e., if an action level is listed as 3 ppm, it is evaluated as 3 ppm above background). The SSO should consult with the RHSM regarding the potential health hazards associated with background readings above 0.5 ppm.

## **SECTION SIX Air Quality Monitoring and Mitigative Measures for Control of Emissions**

### **6.3 DATA LOGGING**

All monitoring data, including background readings, will be logged in the field logbook. The results of daily instrument calibrations can either be logged on the form provided in Attachment C or in the field logbook. All monitoring instruments will be calibrated in accordance with the manufacturer's instructions prior to the start of each shift. Calibration should also be performed when inconsistent or erratic readings are obtained. IF AN INSTRUMENT CANNOT BE CALIBRATED TO SPECIFICATION, OR BECOMES OTHERWISE INOPERABLE, ALL INVASIVE SITE WORK WILL CEASE UNTIL THE INSTRUMENT IS APPROPRIATELY REPAIRED OR REPLACED; the PM or Regional Health and Safety Manager should be contacted for further guidance.

not provided

### **6.4 AIR QUALITY MONITORING INSTRUMENTATION AND TECHNIQUES**

#### ***Photo Ionization Detector/Flame Ionization Detector***

The Thermo Environmental TVA 1000 Photo Ionization Detector (PID)/Flame Ionization Detector (FID) manufactured by Thermo Environmental, will be used to detect trace concentrations of certain organic gases in the air. The PID/FID detects mixtures of compounds simultaneously. PID/FID readings do not measure concentrations of any individual compound when a mixture of compounds is present. The PID/FID will be calibrated before each 8-hr work shift using an isobutylene standard for calibration. Calibrations will be documented. PID/FID readings will be measured in the breathing zone of the most highly exposed worker (i.e., closest to the source).

### **6.5 WORK STOPPAGE RESPONSES**

The following responses will be initiated whenever one or more of the action levels necessitating a work stoppage is exceeded:

1. The RHSM will be consulted immediately.
2. All personnel will be cleared from the work area.
3. Monitoring will be continued until intrusive work resumes.

Any chemical release to air, water, or soil must be reported to the RHSM at once.

↑ level C

### **6.6 CALIBRATION OF AIR MONITORING EQUIPMENT**

If an instrument can not be calibrated to specification, or becomes otherwise inoperable, all invasive site work will cease until the instrument is appropriately repaired or replaced; the PM or RHSM should be contacted for further guidance.

## **SECTION SIX    Air Quality Monitoring and Mitigative Measures for Control of Emissions**

---

### **6.7 MITIGATIVE MEASURES FOR CONTROL OF EMISSIONS**

Based on engineering and administrative controls discussed in Section 5, vapor emissions resulting from normal field operations may exceed the response levels. If the response levels are exceeded at any monitoring location, implementation of mitigative measures to suppress vapor emissions will be required. Appropriate mitigative measures may include ceasing operations until the exact cause of the emissions can be identified and corrected.

### **6.8 DUST CONTROL**

High winds and site operations can cause airborne dust hazards. If site operations generate dust levels that exceed action levels or produce a sustained visible dust, a water mist will be applied to reduce dust generation. If the mist is not effective in reducing dust generation, personnel will upgrade their level of PPE as indicated in Table 9.1.

**7.1 PERSONAL PROTECTIVE EQUIPMENT USE**

The minimum Personal Protective Equipment (PPE) for site personnel is Level D Modified. Level D Modified PPE includes the following:

- Hardhat
- Poly-coated Tyvek coveralls
- Safety glasses with side shields (or impact resistant goggles)
- Steel-toed boots or Chemical-resistant steel-toed boots
- Ear protection (as required)
- Gloves
- Traffic safety vest in the vicinity of heavy equipment.

Escape  
respirator

All geoprobe drilling, sampling, test pit excavation and monitoring well installation will be completed in Level D Modified. Table 9.1 provides the description of the incremental PPE requirements relative to specific Action Levels, as well as the specific kinds of PPE to be used. Procedures for use and selection of personal protective equipment are located in URS SMS 029, included in Appendix B.

**7.2 LIMITATIONS OF PROTECTIVE CLOTHING**

The protective equipment ensembles selected for this project are anticipated to provide protection against the types and concentrations of hazardous materials that may potentially be encountered during field operations. However, no protective garment, glove or boot is resistant to all chemicals at any concentration; in fact, chemicals may continue to permeate or degrade a garment even after the source of the contamination is removed.

In order to obtain optimum usage from PPE, the following procedures are to be followed by all URS personnel:

- When using disposable coveralls, don a clean, new garment after each rest break or at the beginning of each shift
- Inspect all clothing, gloves and boots both prior to and during use for:
  - Imperfect seams
  - Non-uniform coatings
  - Tears
  - Poorly functioning closures
- Inspect reusable garments, boots and gloves both prior to and during use for:

- Visible signs of chemical permeation such as swelling, discoloration, stiffness or brittleness
- Cracks or any signs of puncture or abrasion

Any reusable garments exhibiting any such characteristics will be discarded.

### **7.3 DURATION OF WORK TASKS**

The duration of work tasks in which personnel use PPE ensembles that include chemical protective clothing (including Tyvek), will be established by the SSO. Variables to be considered include ambient temperature and other weather conditions, the capacity of individual personnel to work in the required level of PPE in heat and cold, and the limitations of specific PPE ensembles. Rest breaks will be scheduled according to heat stress monitoring protocols as described in URS SMS 18. A copy of URS SMS 18 is included in Appendix B.

### **7.4 PERSONAL PROTECTIVE EQUIPMENT SELECTION**

Since personnel working onsite may encounter elevated levels of hazardous airborne contaminants released during excavation activities, or may come in contact with contaminants in wastes or soils, varying levels of protection must be available. The level of protection will be minimal in the offsite and support areas, and maximal in the active drilling or excavation portion of the site. The purpose of personal protective equipment is to isolate personnel working onsite from the chemical, physical, and biological hazards present onsite. Careful selection of adequate personal protective equipment should protect the respiratory system, skin and body, face and eyes, feet and hands, head, and hearing.

It is anticipated that Level D Modified protection will be utilized during most of the on-site activities. If a higher level of personal protection is required at any time, the SSO will instruct personnel to upgrade and the RHSM will be contacted. Components of all applicable levels of personal protection are listed in Table 7.1.

## SECTION EIGHT

### Respiratory Protection

Should already be selected.  
We know  
CoC<sub>2</sub>

### 8.1 RESPIRATOR SELECTION

Engineering controls and safe work practices (e.g. elimination of the source of contamination, ventilation equipment, working upwind, limiting exposure time, etc), must always be the primary control for air contaminants. Respirators will be used if engineering or administrative controls are not feasible for controlling airborne exposures below acceptable concentrations and as an interim control measure while additional engineering or administrative controls are implemented.

Once the need for respirators has been established, the respirators will be selected on the basis of the hazards to which the worker is exposed. Only NIOSH-approved respirators will be issued. Selection criteria established in 29 CFR 1910.134 has been used by the HSP Preparer in determining respirator requirements for this project.

Al<sup>3+</sup>  
respirator

*CAUTION: Full-face piece or half-face piece air-purifying respirators are not to be used where there is an oxygen deficiency. Only air-supplied respirators with an emergency escape cylinder or self-contained breathing apparatus will be worn when an oxygen deficiency exists.*

*CAUTION: A respirator does not protect against excessive heat or against hazardous substance that can attack the body through the skin.*

The forms of the airborne contaminants have been evaluated based upon the suspected contaminants of concern. Evaluation of the concentration of the airborne chemical hazard will be performed using direct reading instruments to determine what type respirator will be used. Airborne readings will be compared to Action Levels in Table 9.1. See action level/respirator requirements in Section 6.

### 8.2 MEDICAL SCREENING

URS employees are enrolled in the URS Medical Surveillance Program and are medically evaluated in compliance with the requirements of 29 CFR 1910.134(a)(10).

The medical status of each employee is reviewed annually and as may be deemed necessary by the examining physician if the physical status of the employee changes.

### 8.3 FIT TESTING

A person wearing a respirator must be clean-shaven in the area of the face piece seal. Long hair, sideburns, and skullcaps that extend under the seal are not allowed. Glasses with temple pieces extending under the seal are not allowed for full-face respirators. Persons with facial conditions that prevent a proper seal are not allowed to wear a respirator until the condition is corrected. Facial conditions that may cause a seal problem include missing dentures, scars, severe acne, etc. Contact lenses may be worn with respiratory protection.

No individual will enter an area where the use of respiratory protective equipment is required unless the person has been fit tested within the last year. Fit testing will be performed in accordance with accepted fit test procedures defined in URS SMS 42, included in Appendix B.

### 8.4 RESPIRATOR USE INSTRUCTION

Only those employees who have been properly trained and qualified on the specific type of respirator to be worn may use respirators. No individual will enter an area where the use of respiratory protective equipment is required unless the person has been trained.

All employees whose job assignment requires the use of respirators are given training in accordance with 29 CFR 1910.134 during initial 40-hour and annual Refresher training for hazardous waste operations.

Hands-on training on inspecting and donning a respirator, including user seal checks, was also provided at the time of fit testing. Retraining is performed annually on each type of respirator worn by the individual. In addition, site-specific respirator training is provided during Site Safety Briefings conducted by the SSO. Training records are kept in the employee's training file.

Particulate respirator cartridges should be changed out when the wearer has difficulty breathing through the cartridges. Chemical gas or vapor respirator cartridges will be *changed out at least daily*.

The fit of a chemical gas or vapor respirator should be rechecked and the cartridges changed if the wearer detects chemical odor or feels chemical irritation on the skin, both indicators of leakage or cartridge breakthrough.

### 8.5 RESPIRATOR INSPECTION

The user will inspect respirators before and after each day's use.

Inspection procedure, air purifying respirators (full-face piece and half-face piece cartridge respirators):

Examine the face piece for:

- Excessive dirt
- Cracks, tears, holes, or distortion from improper storage
- Inflexibility
- Cracked or badly scratched lenses (full-face only)
- Incorrectly mounted eyeglass lenses or broken or missing mounting clips (full-face only)
- Cracked or broken air purifying element holder, badly worn threads, or missing gaskets

Examine the head straps or head harness for:

OSHA  
upkeep / cleaning  
requirements

- Breaks or cracks
- Broken or malfunctioning buckles
- Excessively worn serration on the headstraps, which may permit slippage

Examine the inhalation valves (2) and exhalation valve for:

- Foreign material (e.g. hairs, particles, etc.)
- Improper insertion of the valve body in the face piece
- Cracks, tears, or chips in the valve body, particularly in the sealing surface
- Missing or defective exhalation valve covers

Examine the air-purifying cartridge for:

- Missing or worn cartridge holder gasket
- Incorrect cartridge/canister for the hazard
- Incorrect cartridge installation, loose connections, or cross threading in the holder
- Cracks or dents in the outside case or threads of filter or cartridge/canister

## **8.6 CLEANING OF RESPIRATORS**

Respirators assigned and worn by one individual must be dismantled and thoroughly cleaned and disinfected after each day's use. Visitor's or multi-assigned respirators must be cleaned and disinfected after each use. A disinfectant spray or wipe is approved as a disinfectant between uses during the day but not for cleaning and sanitizing after each day's use. Care must be taken to prevent damage from rough handling during the cleaning procedure. After cleaning, respirators must be reassembled.

### ***Respirator Cleaning Procedure***

<b>Washing:</b>	Disassemble and wash with a mild liquid detergent in warm water (not to exceed 110°F). A stiff bristle (not wire) brush may be used.
<b>Rinsing:</b>	Rinse in clean water (110°F maximum) to remove all traces of detergent. This is very important to prevent dermatitis.
<b>Disinfecting:</b>	Thoroughly rinse or immerse in a sanitizer provided by the manufacturer. Alternatively, a weak chlorine bleach solution (1 milliliter liquid bleach/liter of water) may be used.
<b>Final Rinsing:</b>	Rinse thoroughly in clean water (110°F maximum) to remove all traces of disinfectant. This is very important to prevent dermatitis.
<b>Drying:</b>	Drain and dry hanging by the straps from racks (take care to prevent damage) or towel drying with clean soft clothes or paper towels.

**8.7 MAINTENANCE OF RESPIRATORS**

Routine respirator maintenance such as replacing missing valves, gaskets, nosecups etc., must only be performed by trained respirator users or a respirator manufacturer's representative. Only approved replacement parts must be used. Substitution of parts from a different brand or type of respirator is generally not possible, invalidates the technical approval of the respirator, and is not permitted. Any respirator suspected of being defective must be removed from service and replaced.

**8.8 STORAGE OF RESPIRATORS**

When not in use, respirators must be stored to protect them from dust, sunlight, heat, extreme cold, excessive moisture, damaging chemicals, and physical damage. Respirators must be stored in sealable (e.g. Ziplock® or twist-tie) reusable plastic bags between shifts.

The respirator storage environment must be clean, dry, and away from direct sunlight. Onsite cabinets or cases are suggested. Storing bagged respirators in vehicles is discouraged due to the potential for damage from other material or equipment.

**8.9 ADDITIONAL INFORMATION**

Additional information on the URS Respiratory Protection Program is located in URS SMS 42, included in Appendix B.

## **9.1 GENERAL**

Barricade tape and/or barricades shall be used to delineate a work zone for safety purposes around the work area. The barriers should be set in a 25-foot radius (as practical) around the work area to provide sufficient maneuvering space for personnel and equipment. A short piece of barricade tape can be affixed to a secure upright (e.g., crane mast or vehicle antenna) to serve as a wind direction telltale. A five-foot opening in the barricades at the support zone (upwind of the work area) will serve as the personnel and equipment entry and exit point. The personnel decontamination station will be established at this point if formal decontamination procedures are required (see Section 9.0). All entry and exit from the work area will be made at this opening in order to control potential sources of contamination and leave contaminated soil and debris in the work area.

The PM or SSO (*with the assistance of the facility representative*) will determine an upwind evacuation area prior to each shift during excavation activities, and all personnel will be notified of its location. The PM or SSO establish a signal to use in the event of an emergency. Once this signal has been given, all personnel must immediately stop work and proceed to the evacuation area.

The SSO will verify that all site visitors sign the visitors' log. In addition, all URS personnel and site visitors entering the work area must present evidence of their participation in a medical surveillance program and completion of health and safety training programs that fulfill the requirements of this plan. These documents will be maintained on-site for the duration of this project.

The SSO will provide site hazard and emergency action information to all site visitors before they enter the site. Visitors will review and sign the Safety Plan Compliance Agreement.

## **9.2 WORK ZONES**

Prior to the commencement of any intrusive activity at the site, work zones must be established as described below.

- **Exclusion Zone** – A 25-foot (as practical) circle around the work area will be defined before work starts. The encircled area will constitute the “Exclusion Zone”. This zone is where potentially hazardous contaminants and physical hazards to the workers will be contained. Appropriate personal protection as described in Section 7 will be required in this area. Plastic sheeting (visqueen) and/or tarps may be used as necessary to control contaminated materials spilled to the ground during site operations. The size of the Exclusion Zone may be altered to accommodate site conditions and to ensure contaminant containment.
- **Contamination Reduction Zone (CRZ)** – a corridor leading from the Exclusion Zone will be defined, and will lead from the work area to a break area. All decontamination activities will occur in the CRZ. A waste container will be placed at the end of the corridor so contaminated disposable equipment can be placed inside and covered. Surface/soil contamination in this area should be controlled using plastic sheeting. No one will be

permitted into the Contamination Reduction Zone or Exclusion Zone unless they are in full compliance with the requirements of this Plan.

- Support Zone – a Support Zone, the outermost part of the site, must be defined for each field activity. Support equipment is located in this uncontaminated or clean area. Normal work clothes are appropriate within this zone. The location of this zone depends on factors such as accessibility, wind direction (upwind of work area), and resources (i.e., roads, shelter, utilities).

## SECTION TEN

## Decontamination Procedures

When exiting the exclusion zone, or if the monitoring instrument readings indicate respirator use during work activities, the following steps will be followed whenever personnel leave the exclusion zone/work area:

1. Remove all equipment, sample containers, and notes to the CRZ. Obtain decontamination solutions (bleach, soap and water) and decon tools (shovels, auger flights, etc.) by brushing them with the decontamination solutions and then under a water rinse. A high-pressure steam cleaner may also be used for decon. All waste and spent decon solutions will be discharged into the sewer.
2. Scrub boots with a stiff bristle brush using bleach and soap, and then rinse with water. Washtubs and chairs will be provided.
3. Remove outer gloves (and boot covers, if used).
4. Remove Tyvek coveralls and place in disposal drum.
5. Remove hardhat and eye protection.
6. Remove respirator.
7. Remove inner gloves.
8. Wash hands and face.

The decontamination area will be covered with plastic sheeting, which will be replaced when torn or heavily soiled, and at the end of each shift.

Each worker will be responsible for cleaning, sanitizing and storing their own respirator in accordance with manufacturer's guidance (i.e., washing in warm water and detergent or sanitizing solution, air drying, and storing in a plastic storage bag; see Section 8). Cartridges will be changed in accordance with the procedures described in Section 8.4.

All spent decontamination fluids (rinse waters, etc.) shall be handled as directed by the PM and in accordance with relevant regulations.

Decontamination procedures are also detailed in the Quality Assurance Project Plan (QAPP) and the CMI Work Plan. Where procedures conflict, the most stringent will apply.

### 10.1 SANITATION

Potable water will be made available at the site, either from a pressurized source or commercially available bottled water. Drinking cups will be supplied so personnel will neither drink directly from the source of water nor have to share drinking cups. Sources of non-potable water shall be clearly labeled as such.

Unless toilet facilities are available on site or transportation is readily available to transport personnel to nearby (within five minutes) toilet facilities, portable toilet facilities, such as chemical toilets, will be provided on site.

Washing facilities will be provided on site, and will be located in the decontamination area or the support area. Soap, clean water, wash basins and single-use towels will be available for personnel use.

URS procedures for site sanitation are located in Safety Management Standard 30, a copy of which is included in Appendix B.

## **10.2 DECONTAMINATION – MEDICAL EMERGENCIES**

In the event of physical injury or other serious medical concerns, immediate first aid is to be administered in lieu of further decontamination efforts.

See Emergency Decontamination chart for a decision tree for emergency decontamination.

## **10.3 DECONTAMINATION OF TOOLS**

When all work activities have been completed, contaminated tools used by URS personnel will be either appropriately decontaminated or properly disposed of as hazardous waste.

It is expected that all tools will be constructed of non-porous, non-absorbent materials. This will aid the decontamination process. Any tool, or part of a tool, which is made of a porous/absorbent material will be discarded and disposed of as a hazardous waste if it cannot be properly decontaminated.

Tools will be placed on a decontamination pad or into a bucket and thoroughly washed using a soap solution and brushing, followed by a fresh water rinse. All visible particles are to be removed before the tool is considered clean.

**11.1 GENERAL**

1. Eating, drinking, chewing gum or tobacco, and smoking are prohibited in the contamination reduction zone (CRZ) or where the possibility for the transfer of contamination exists.
2. All personnel will enter designated work areas only through the CRZ. All personnel leaving an exclusion/work zone must exit through the CRZ and pass through the decontamination station as described in Section 10.0.
3. Personnel will wash their hands and face thoroughly with soap and water prior to eating, drinking or smoking.
4. Avoid contact with potentially contaminated substances. Avoid, whenever possible, kneeling, leaning or sitting on contaminated surfaces. Do not place monitoring equipment on potentially contaminated surfaces.
5. All field crew members should make use of their senses to alert them to potentially dangerous situations in which they should not become involved (i.e., presence of strong, irritating or nauseating odors).
6. Only those vehicles and equipment required to complete work tasks should be permitted within the exclusion/work zone (cranes, excavators, and similar items). All non-essential vehicles should remain within the support zone.
7. Containers, such as drums, will be moved only with the proper equipment and will be secured to prevent dropping or loss of control during transport.
8. Field survey instruments, such as CGIs, should be covered with plastic or similar covering to minimize the potential for contamination.
9. No matches or lighters will be permitted in the exclusion zone or CRZ.
10. Contaminated protective equipment, such as respirators, hoses, boots, and disposable protective clothing, will not be removed from the exclusion zone or decontamination area until it has been cleaned, or properly packaged and labeled.
11. Prevent, to the extent possible, spills. In the event that a spill occurs, contain liquid if possible.
12. Prevent splashing of the contaminated materials.
13. Field crewmembers shall be familiar with the physical characteristics of the site operations including:
  - Wind direction in relation to the contaminated area;
  - Accessibility to equipment and vehicles;
  - Areas of known or suspected contamination;
  - Site access; and,
  - Nearest water sources.

14. The number of personnel and equipment in the exclusion zone should be minimized but only to the extent consistent with workforce requirements of safe site operations.
15. All wastes generated by URS activities at the site will be disposed of as directed by the PM.
16. All personal protective equipment will be used as specified and required.
17. The buddy system will be used at all times when conducting sewer rehabilitation work or when working in remote areas.
18. Personnel are to immediately notify the SSO or Site Manager if any indications of potential explosions or unusual conditions are observed.

### 11.2 SAMPLING PRACTICES

For all sampling activities, the following standard safety procedures shall be employed:

1. All sampling equipment should be cleaned before proceeding to the site.
2. At the sampling site, sampling equipment should be cleaned after each use.
3. Work in "cleaner" areas should be conducted first where practical.
4. All unauthorized personnel will remain outside exclusion zones at all times.

### 11.3 SAMPLE SHIPMENT/HAZARDOUS MATERIALS SHIPMENT

Shipping of hazardous materials may be required at the site. Hazardous materials include, but are not limited to, compressed gases, laboratory reagents, filed samples, hazardous wastes and radioactive materials (i.e., Troxler nuclear gauges). Personnel involved in the shipping of materials should follow URS SMS 048, *DOT Shipping*. A copy of URS SMS 048 is included in Appendix B. If hazardous materials are to be shipped, then they must be shipped in accordance with those regulations by an individual who is certified as having been Function-Specific trained as required under the DOT regulations. Questions concerning shipping can also be directed to the URS HazMat Shipping Support Helpline at 800-381-0664.

It is URS policy to evacuate personnel from areas involved in hazardous material emergencies and to summon outside assistance from agencies with personnel trained to respond to the specific emergency. This section outlines the procedures to be followed by URS personnel in the event of a site emergency. These procedures are to be reviewed during the onsite safety briefings conducted by the SSO.

In the event of a fire or medical emergency, the emergency numbers identified on Table 12.1, *Emergency Contacts*, in Appendix C can be called for assistance.

## 12.1 PLACE OF REFUGE

In the event of a site emergency requiring evacuation, all personnel will evacuate to a pre-designated area that is located a safe distance from any health or safety hazard (typically the URS field office, unless conditions dictate otherwise). The SSO (*in cooperation with a facility representative*) will designate a primary assembly area prior to the start of work each day. The daily pre-designated assembly area may have to be re-designated by the SSO in the event of an emergency where the area of influence affects the primary assembly area. Once assembled, the SSO shall take a head count. The SSO will evaluate the assembly area to determine if the area is outside the influence of the situation; if not, the SSO will redirect the group to a new assembly area where a new head count will be taken.

During any site evacuation, all employees shall be instructed to observe wind direction indicators. During evacuation, employees will be instructed to travel upwind or crosswind of the area of influence. The SSO will provide specific evacuation instructions, via the site emergency radio if necessary, to site personnel regarding the actual site conditions.

## 12.2 COMMUNICATION

A communication network must be set up to alert site personnel of emergencies and to summon outside emergency assistance. Where voice communication is not feasible an alarm system (i.e., sirens, horns, etc.) should be set up to alert employees of emergencies. Radio communication may also be used to communicate with personnel in the exclusion zone. Where phone service is not readily available, radios or portable phones should be used to communicate with outside agencies. Site personnel should be trained on the use of the site emergency communication network. Emergency phone numbers shall be posted at the phone or radio used for outside communication. The SSO is responsible for establishing the communication network prior to the start of work, and for explaining it to all site personnel during the site safety briefing.

In the event of an emergency, personnel will use the following hand signals where voice communications are not feasible:

<u>Signal</u>	<u>Definition</u>
Hands clutching throat	Out of air/can't breathe
Hands on top of head	Need assistance
Thumbs up	OK/I'm alright/I understand
Thumbs down	No/negative
Arms waving upright	Send back support
Grip partner's wrist	Exit area immediately

## **12.3 EMERGENCY RESPONSE PROCEDURES**

### **12.3.1 Emergency Response Team**

The emergency response team will consist of employees who assume the following roles:

- Emergency Care Provider(s)
  - Provide first aid/CPR as needed.
- Communicator
  - The role of the communicator is to maintain contact with appropriate emergency services, providing as much information as possible, such as the number injured, the type and extent of injuries, and the exact location of the accident scene. The communicator should be located as close to the scene as possible in order to transmit to the emergency care providers any additional instructions that may be given by emergency services personnel in route.
- SSO
  - The SSO should survey and assess existing and potential hazards, evacuate personnel as needed, and contain the hazard. Follow up responsibilities include replacing or repairing damaged equipment, documenting the incident, and notifying appropriate personnel/agencies described under incident reporting. It also includes reviewing and revising site safety and contingency plans as necessary.

In the event of an emergency, follow the procedure outlined in the Emergency Response Checklist on the following page. Notify site personnel of the situation. Survey the scene to determine if the situation is safe, to determine what happened, and to search for other victims. The Emergency Response Checklist can be used to help remember the things to do in an emergency.

**EMERGENCY RESPONSE CHECKLIST**

<b>In an Emergency</b>	<b>Yes</b>	<b>No</b>
Confirm the reported incident	_____	_____
Evacuate and secure the area	_____	_____
Render first aid/emergency medical care	_____	_____
Notify promptly:		
Superintendent	_____	_____
Project Manager	_____	_____
Fire Department	_____	_____
Police Department	_____	_____
Nearest Hospital or Medical Care Facility	_____	_____
Start Documentation	_____	_____
If spill or leak occurs:		
Don the proper PPE	_____	_____
Stop the source	_____	_____
Contain the spill	_____	_____
Clean up the spill	_____	_____
Upon evacuating, take attendance at the assembly area	_____	_____
Authority given:		
Leave the site	_____	_____
Restart the operations	_____	_____
Debrief and document the incident	_____	_____
A copy of the document submitted to the RHSM	_____	_____

**12.4 MEDICAL EMERGENCY RESPONSE PLAN**

At least one URS employee on site will hold a current certificate in American Red Cross Standard First Aid. This training provides six and one-half hours of Adult CPR and Basic First Aid. If a medical emergency exists, consult the emergency phone number list and request an ambulance immediately. Perform First Aid/CPR as necessary, stabilize the injured, decontaminate if necessary, and extricate only if the environment they are in is dangerous or unsafe and **ONLY** if the rescuers are appropriately protected for potential hazards they may encounter during the rescue. When emergency services personnel arrive, communicate all first aid activities that have occurred. Transfer responsibility for care of the injured/ill to the emergency services personnel.

The following items and emergency response equipment will be located within easy access at all times:

- First Aid Kit and Infection Control Kit;
- Eyewash – A 15 minute eyewash (required if corrosives are present) or an appropriate amount of portable sterile eyewash bottles will be available on site for flushing foreign particles or contaminants out of eyes. The SSO will demonstrate the proper operation of the unit(s) prior to the start of work;
- Emergency Phone Numbers List; and
- Portable radios for emergency communications in remote areas.

Drugs, inhalants, or medications shall not be included in the First Aid Kit.

Supplies should be re-ordered as they are used. A monthly inventory must be done on the first aid kit and infection control kit contents and supplies re-ordered that have been used and not reported.

***Directions to the Hospital:*****Ashtabula County Medical Center**

2420 Lake Avenue

Ashtabula, Ohio 44004

Phone Number: 440-997-6600

Exiting the site to State Road, turn left (south) travel approximately 0.75 mile turn right (west) at the first road which is east 21<sup>st</sup> Street. You will cross State Route 11 continue on to the stop sign. At the stop sign turn left (south) onto Columbus Avenue for approximately 0.25 miles turn right (west) at the flashing light onto east 23<sup>rd</sup>. Travel on east 23<sup>rd</sup> to the stop sign at Harbor avenue. Turn left (south) on Harbor and then an immediate right onto east 24<sup>th</sup> street. The hospital is on the south east corner of east 24<sup>th</sup> street and Lake Avenue.

**12.5 INCIDENT REPORT**

All site injuries and illnesses must be reported to the SSO and PM immediately following first-aid treatment. The SSO will notify the Regional Health and Safety Manager. Work is to be stopped until the PM or SSO and RSO have determined the cause of the incident and have taken the appropriate action to prevent a reoccurrence. Any injury or illness, regardless of severity, is to be reported. A copy of the URS incident report form SMS 49 is included in Appendix D.

**12.6 OPERATION SHUTDOWN**

Under certain extreme hazardous situations the SSO or SSR may request that site operations be temporarily suspended while the underlying hazard is corrected or controlled. During operation shutdown, all personnel will be required to stand upwind to prevent exposure to fugitive emissions. The SSO, with concurrence from the Regional Health and Safety Manager, will have ultimate authority for operations shutdown and restart.

**12.7 SPILL OR HAZARDOUS MATERIALS RELEASE**

Small spills are immediately reported to the SSO and are dealt with according to the chemical manufacturer's recommended procedures found on the MSDS. Steps will be taken to contain and/or collect small spills for approved storage and disposal.

In the unlikely event of a larger release of hazardous materials as a result of site activities, site personnel will evacuate to the predesignated assembly area. The local fire department and the Ohio EPA Emergency Response Unit (1-800-282-9378) will be notified by the SSO immediately and appropriate actions will be taken to protect the public health and mitigate the contaminant release. The Ohio EPA Emergency Response Unit can also be reached through the local police or fire department. The Project Manager will make the following emergency contacts:

**Agency Name (and Address)****Telephone No.**

- Fire Department 911 or 440-997-4641
- Police Department 911 or 440-992-7172
- Ashtabula County Medical Center 440-997-6600  
2420 Lake Avenue  
Ashtabula, Ohio 44004

**URS Health and Safety Management and Field Personnel**

- Jim Anderson Project Manager 216-622-2400  
After work hours 440-315-8017  
or 440-985-1303
- Jeff Berk/Michael Koss URS Site Safety Officer 216-622-2400
- Cece Weldon Regional Health and Safety Manager 248-553-9449  
(Cell) 248-752-3405

**Environmental Protection Agency**

- Ohio EPA Emergency Response Unit 800-282-9378
- Ohio EPA 614-466-8500

### 13.1 TRAINING AND MEDICAL SURVEILLANCE

All URS site personnel will have met the requirements of 29 CFR 1910.120(e), including:

- Forty hours of initial off-site training or its recognized equivalent
- Eight hours of annual refresher training for all personnel (as required)
- Eight hours of supervisor training for personnel serving as Site Safety Officers
- Three days of work activity under the supervision of a trained and experienced supervisor

All URS site personnel are participating in medical surveillance programs that meet the requirements of 29 CFR 1910.120(f). Current copies of training certificates and statements of medical program participation for all URS personnel are maintained by the local office.

In addition, all URS site personnel will review this HSP and sign a copy of the Safety Plan Compliance Agreement, which is found in Attachment B. The PM will maintain these agreements at the site, and place them in the project file at the conclusion of the operation.

Prior to the start of operations at the site, the SSO will conduct a site safety briefing, which will include all personnel involved in site operations. At this meeting, the SSO will discuss:

- Contents of this HSP
- Types of hazards at the site and means for minimizing exposure to them
- The type of monitoring that will be performed
- Action levels for upgrade and downgrade of personal protective equipment
- Personal protective equipment that will be used
- Site-specific respiratory protection requirements
- Decontamination protocol
- Site control measures, including safe operating practices and communication
- Location and use of emergency equipment
- Evacuation signals and procedures

All site personnel, including subcontractor personnel, are to attend the briefings and sign the briefing form.

Subsequent site safety briefings will be conducted at least weekly, or whenever there is a change in task or significant change in task location. Briefings will also be conducted whenever new personnel report to the site.

## **SECTION THIRTEEN**

### **Training, Medical Surveillance and Site Inspections**

---

#### **13.2 SITE INSPECTIONS**

The URS Project Manager or Site Safety Officer is to conduct a daily site inspection prior to the start of each shift. It is the responsibility of the Project Manager or Site Manager to resolve discrepancies immediately, contacting the Office Health and Safety Manager and Regional Health and Safety Manager if necessary for assistance. Inspections are to be documented and maintained on site until the completion of the project, at which time will be placed in the project files.

The PM and SSO are responsible for site record keeping. Prior to the start of work, they will review this plan; if there are no changes to be made, they will sign the approval form (PM) or acceptance form (SSO) and forward a copy to the Office Health and Safety Manager.

All URS personnel will review the HSP and sign the Safety Plan Compliance Agreement in Attachment B; copies of these forms will be maintained in the project file as noted in Section 12.

The SSO will conduct a Site Safety Briefing in accordance with Section 13 and have all attendees sign the form in Attachment B; copies will be maintained in the project file.

Any incident or exposure incident will be investigated and the Incident Report form (SMS 049) will be completed and forwarded to the Office Human Resources Representative and the Regional Health and Safety Manager.

All instrument readings and calibrations, PPE use and changes, health and safety-related issues, and deviations from or problems with this HSP will be recorded in the field log.

## TABLES

**TABLE 7.1**  
**COMPONENTS OF PERSONAL PROTECTION LEVELS**

<b>Level D Modified Protection</b>
Safety glasses with side shields or goggles
Hard hat
Face shield (optional)
Poly-coated Tyvek coveralls
Ordinary work gloves
Hearing protection (as needed)
Inner gloves of snug-fitting latex or vinyl (if handling contaminated materials)
Outer gloves of nitrile – butadiene (if handling contaminated materials)
Steel-toe, steel-shank work boots (neoprene or chemical resistant)
Full-face air-purifying respirator (immediately available) <sup>1</sup>

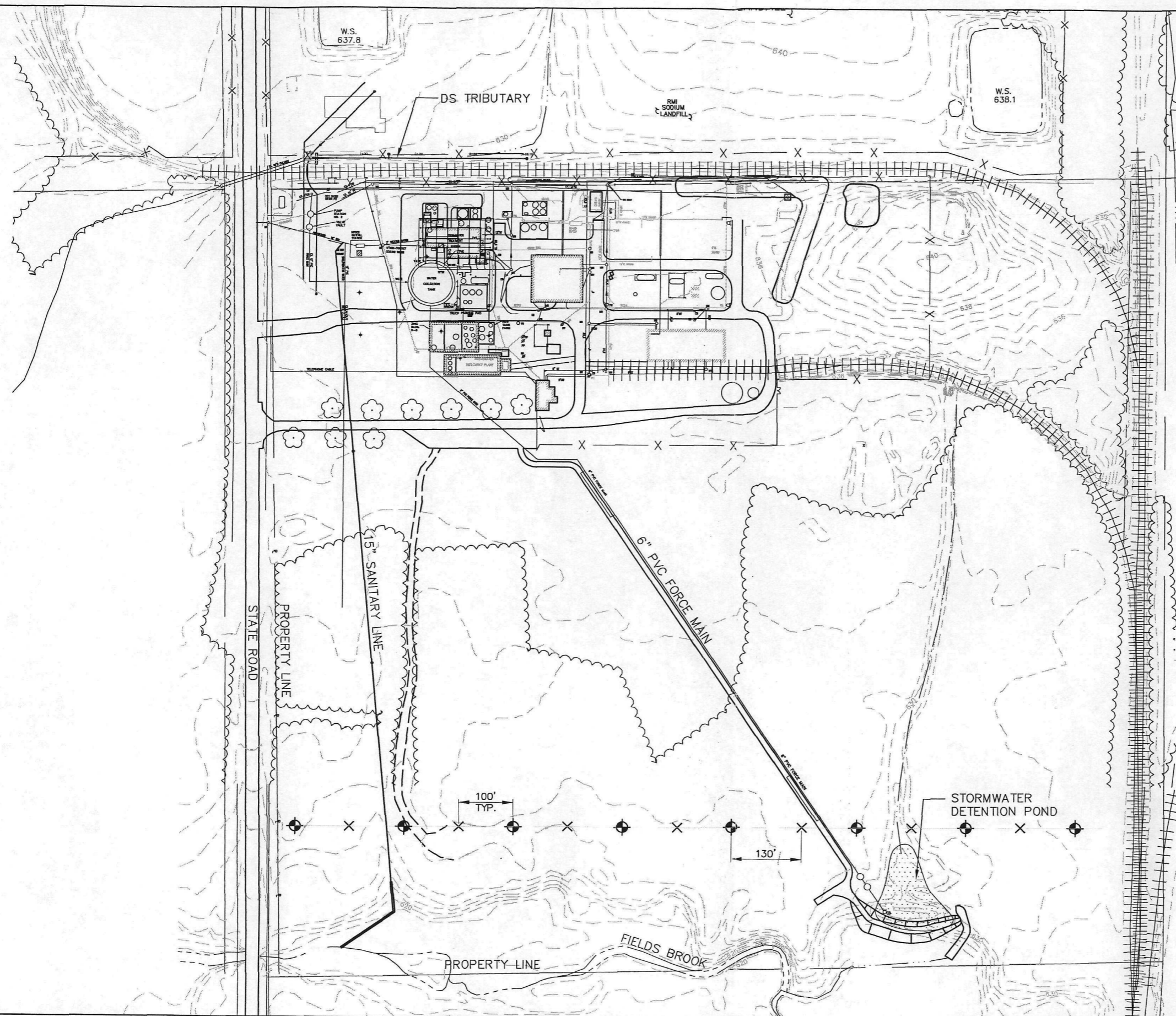
**TABLE 7.1**  
**COMPONENTS OF PERSONAL PROTECTION LEVELS**  
**(Continued)**

<b>Level B Protection</b>
Hard hat
Poly-coated Tyvek
Inner gloves of snug-fitting latex or vinyl
Outer gloves of nitrile - butadiene
Steel-toe, steel-shank work boots (neoprene or chemical resistant)
Pressure-demand supplied air respirator
5-minute escape bottle
Two-way radio communications
Taping of gloves and boots to disposable coveralls

**TABLE 9.1 REVISED**  
**ACTION LEVELS DURING SITE ACTIVITIES**

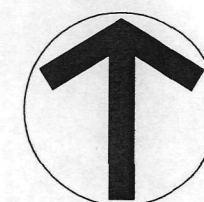
Organic Vapors (PID) (ppm)	Responses
< 1 Above Background – Point of Operations/Release Source Point (1 min. average)	a) Continue activities. b) Level D Modified protection. c) Continuous air monitoring.
> 1 Above Background – Operators Breathing Zone (1 min. average)	a) Evacuate area

## FIGURES

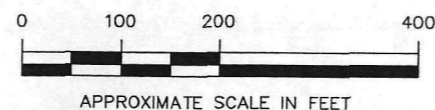


# LEGEND

- X BORING LOCATIONS
- ⊕ BORING MODIFIED TO TEMPORARY 2" MONITORING WELLS



URS



PROJECT DETREX CORPORATION  
SUBJECT SITE LOCATION MAP  
SCALE 1"=200'

JOB NO. 13810732  
DATE 8/25/2006  
DRAWN BY MMS  
FIGURE 1-1



**Start: 1100 State Rd**  
Ashtabula, OH 44004-3943, US

**End: 2420 Lake Ave**  
Ashtabula, OH 44004-4954, US

**Notes:**

WE KNOW HOTELS INSIDE AND OUT.®

**Find Deals** in your  
**Favorite Cities!** GO!

**hotels.com**

**Directions**

**Distance**

**Total Est. Time:** 6 minutes

**Total Est. Distance:** 2.22 miles



**1:** Start out going SOUTH on STATE RD toward MIDDLE RD.

0.5 miles



**2:** Turn RIGHT onto E 21ST ST.

0.7 miles



**3:** Turn LEFT onto COLUMBUS AVE.

0.1 miles



**4:** Turn RIGHT onto E 23RD ST.

0.3 miles



**5:** Turn LEFT onto HARBOR AVE.

<0.1 miles



**6:** Turn RIGHT onto E 24TH ST.

0.3 miles



**7:** Turn LEFT onto LAKE AVE.

<0.1 miles



**8:** End at **2420 Lake Ave**  
Ashtabula, OH 44004-4954, US

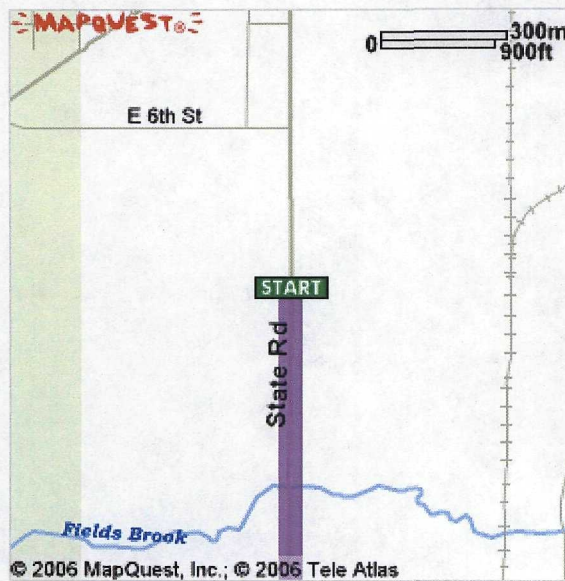
**Total Est. Time:** 6 minutes

**Total Est. Distance:** 2.22 miles



**Start:**  
**1100 State Rd**  
 Ashtabula, OH 44004-3943, US

**End:**  
**2420 Lake Ave**  
 Ashtabula, OH 44004-4954, US



All rights reserved. Use Subject to License/Copyright  
 These directions are informational only. No representation is made or warranty given as to their content, road conditions or route usability or expeditiousness. User assumes all risk of use. MapQuest and its suppliers assume no responsibility for any loss or delay resulting from such use.

## **APPENDIX A**

### **Constituents of Concern for Health & Safety**

## **APPENDIX A**

**INFORMATION NOT AVAILABLE**

## **APPENDIX B**

### **Standard Operating Procedures and Safety Management Standards**

## **URS SAFETY MANAGEMENT STANDARD**

### **Worker Right-to-Know (Hazard Communication)**

---

#### **1. Applicability**

This procedure applies to URS office and field operations.

#### **2. Purpose and Scope**

The worker right-to-know program provides URS personnel with information and training about safety and health hazards associated with the chemicals they might encounter in the workplace. This procedure describes how chemical safety hazards are communicated to URS personnel working in offices and at field site locations, and how information is to be provided to employees of other employers working at the location. The requirements include steps to acquire this information, maintain it, and train everyone to use it.

#### **3. Implementation**

Office Locations: Implementation of this program is the responsibility of the Office Manager.

Field Activities: Implementation of this program is the responsibility of the Project Manager.

#### **4. Requirements**

##### **A. Hazardous Material Inventory**

1. Maintain a hazardous material inventory that lists all of the hazardous materials used at each workplace (i.e., office/field location). Use chemical names consistent with the applicable material safety data sheet (MSDS).
2. File a copy of the chemical inventory with the Project Safety Plan or with the local URS Health, Safety, and Environment (HSE) Representative.

##### **B. Material Safety Data Sheets (MSDS)**

1. Obtain a MSDS for each chemical before it is used.
2. Review each MSDS when it is received to evaluate whether the information is complete and to determine if existing protective measures are adequate.
3. Maintain a collection of all applicable and relevant MSDS where they are accessible by all employees at all times.

## **URS SAFETY MANAGEMENT STANDARD**

### **Worker Right-to-Know (Hazard Communication)**

---

4. Replace MSDS when updated sheets are received. Communicate any significant changes to those who work with the chemical.
5. MSDS are required for all hazardous materials used on site by project personnel.

#### C. Labels

Unless each container has appropriate labeling, label all chemical containers with:

1. Identity of the hazardous chemical(s),
2. Appropriate hazard warnings, and
3. Name and address of the chemical manufacturer, importer, or other responsible party.

#### D. Hazardous Nonroutine Tasks

Periodically, employees are required to perform hazardous non-routine tasks. Prior to starting work on such projects, provide each employee with information about hazards to which they may be exposed during such an activity.

This information will include:

1. Specific chemical hazards.
2. Protective/safety measures which must be utilized; and
3. Measures that have been taken to lessen the hazards including ventilation, respirators, presence of another employee and emergency procedures.

#### E. Informing Contractors/Subcontractors

Provide contractors/subcontractors the following information on chemicals used by or provided to URS personnel:

1. Names of hazardous chemicals to which they may be exposed while on the jobsite.
2. Precautions the employees may take to lessen the possibility of exposure by usage of appropriate protective measures.

## **URS SAFETY MANAGEMENT STANDARD**

### **Worker Right-to-Know (Hazard Communication)**

---

3. Location of URS MSDS and written chemical inventory.

#### **F. Training**

1. Conduct training of all employees potentially exposed to hazardous materials on the following schedule:
  - a. Before new employees begin their jobs.
  - b. Whenever new chemicals are introduced into the workplace, or
  - c. Annually thereafter.
2. This training will include:
  - a. Applicable regulatory requirements.
  - b. Names of those responsible for implementing this program.
  - c. Location of the program, inventory and MSDS.
  - d. Chemicals used and their hazards (chemical, physical and health).
  - e. How to detect the presence or release of chemicals.
  - f. Safe work practices.
  - g. How to read an MSDS.
3. Document the training.

#### **5. Documentation Summary**

- A. File these records with the local URS HSE Representative:
  1. Chemical Inventory.
  2. Location of the MSDS inventory.
  3. Training records.
  4. Contractor/Subcontractor notifications.
- B. File these records in the Project Safety File.

## **URS** SAFETY MANAGEMENT STANDARD **Worker Right-to-Know (Hazard Communication)**

---

1. Chemical Inventory.
2. Location of the MSDS inventory.
3. Training records.
4. Contractor/Subcontractor notifications.

### **6. Resources**

- A. U.S. OSHA Technical Links - Hazard Communication
- B. U.K. - Control of Substance Hazardous to Health - Regulations

References to the UK legislation listed above can be found at the link provided:

[www.tionestop.com](http://www.tionestop.com)

username: Thorburn

password: Dames

enter search criteria – (see underlined text)

select the checkbox for Construction Information Service (CIS)

- C. National Paint and Coatings Association (NPCA) Hazardous Materials Identification System (HMIS) Version III
- D. National Fire Protection Association (NFPA) Standard 704 (Standard System for the Identification of Hazardous Materials for Emergency Response)

SMS 002  
Issue Date: June 1999  
Revision 2: March 2005

# **URS**

## **SAFETY MANAGEMENT STANDARD**

### **Accessing Industrial Sites**

---

#### **1. Applicability**

This procedure applies to projects where URS personnel access industrial sites.

#### **2. Purpose and Scope**

The purpose of this procedure is to ensure that personnel use the appropriate personal protective equipment, and they receive appropriate hazard, safety and emergency information when accessing industrial sites.

#### **3. Implementation**

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

#### **4. Requirements**

A. Prior to accessing the site contact the facility to determine:

1. PPE requirements for personnel – SMS 29.
2. The procedure for safely accessing the site.
3. The need for training and/or orientation upon arrival including MSDS.
4. Any other safety procedures specifically required at the site that would require advance planning or coordination.
5. Security requirements.

B. Develop a Health and Safety Plan or a Safe Work Plan, as required by site requirements.

C. Upon accessing the site:

1. Report to the designated entry location.
2. Attend required safety orientation/briefings.
3. Prepare to comply with site rules.
4. Inquire as to the following issues if not addressed:

## **URS** SAFETY MANAGEMENT STANDARD

### **Accessing Industrial Sites**

---

- a. Facility emergency procedures including alarms and evacuation procedures.
  - b. How to activate emergency procedures if necessary.
  - c. Information regarding potential chemical exposures:
    - 1. MSDS access - SMS 002.
    - 2. Where these potential exposures exist.
    - 3. Controls in place to prevent exposures.
    - 4. How to identify when exposures may occur.
  - d. Safety hazards which may not be inherently obvious and site rules or procedures regarding those hazards.
  - e. Traffic issues within the facility including:
    - 1. Lift truck and material handling vehicles.
    - 2. Establishment of Right of Way.
    - 3. Vehicle access to site, including speed limits.
    - 4. Special pedestrian rules.
  - f. Major program coordination issues, such as:
    - 1. Confined Space Entry Procedures – SMS 10.
    - 2. Lockout/Tagout and Control of Hazardous Energy Procedures – SMS 023.
    - 3. Utility clearances - SMS 034.
    - 4. Hot Work Permits – SMS 020.
- D. Document site issues on Attachment 4-1.
- E. Enter the site prepared to comply with URS and site procedures. In the event that there is a discrepancy, coordinate with site representative and prepare to use the most protective procedure.

# **URS**

## **SAFETY MANAGEMENT STANDARD**

### **Accessing Industrial Sites**

---

- F. Wherever significant safety issues remain that cannot be resolved locally, contact the local URS Health, Safety, and Environment Representative for support in resolving such issues.

#### **5. Documentation Summary**

- A. File Attachment 4-1 "Accessing Industrial Sites" in the Project Health and Safety File.

#### **6. Resources**

- A. Attachment 4-1 - Assessment Form



Health, Safety, and Environment  
**HEALTH AND SAFETY ASSESSMENT**

Attachment 4-1

Revision 1: March 2005

Industrial Site \_\_\_\_\_

Project Manager \_\_\_\_\_

Date \_\_\_\_\_

	Yes	No	N/A
<b>PRE-JOB SURVEY</b>			
Are there PPE requirements for site access?			
If yes, describe the requirements.			
What are the procedures for safely accessing the site?			
Is there a requirement for orientation or a safety briefing upon arrival?			
Are there any other safety or security procedures specific to this site that require advance planning?			
If yes, describe the requirements			
<b>UPON ACCESSING THE SITE</b>			
Have facility emergency procedures been discussed?			
Alarms			
Evacuation Routes			
Procedures to activate emergency system			
Has the worker Right to Know program for the site been addressed (Hazcom/WHMIS)?			
Site chemical hazards shared with URS staff?			
Information provided to owner regarding chemicals brought to site by URS?			
Are all parties aware of how to detect exposures to chemicals?			
Have control measures regarding potential chemical exposures been discussed between parties?			
Are there any safety hazards on the site which are not inherently obvious?			



Health, Safety, and Environment  
**HEALTH AND SAFETY ASSESSMENT**

Attachment 4-1

Revision 1: March 2005

	Yes	No	N/A
If yes, describe hazards and site protective measures.			
Are there any special traffic rules for the site?			
Lift truck or material handling vehicles onsite?			
Right of way issues? Speed limits?			
If yes, describe.			
Are there any special rules for contractor vehicles on site?			
Are there any special pedestrian rules?			
If yes, describe			
Are there any major program coordination issues at this site?			
Confined Space Entry			
Lockout/Tagout			
Utility Clearances / Hot Work Permits			
If yes, describe.			
Have all of the above-related issues been shared with all project-related personnel and subcontractors?			
If no, why not?			

Project Manager \_\_\_\_\_ Date \_\_\_\_\_

Site Manager \_\_\_\_\_ Date \_\_\_\_\_

# **URS** SAFETY MANAGEMENT STANDARD

## **Heat Stress**

---

### **1. Applicability**

This procedure applies to URS field projects where ambient (not adjusted) temperatures exceed 70°F (21°C) for personnel wearing chemical protective clothing, including Tyvek coveralls, and 90°F (32°C) for personnel wearing normal work clothes.

### **2. Purpose and Scope**

The purpose of this procedure is to protect project personnel from the effects of heat related illnesses.

### **3. Implementation**

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

### **4. Requirements**

A. Monitor ambient temperatures and conduct heat stress monitoring when threshold temperatures (see Section 1) are reached.

B. Conduct initial monitoring to determine first rest break.

1. Measure the air temperature with a standard thermometer with the bulb shielded from radiant heat; this yields T (actual).
2. Estimate the fraction of sunshine by judging what percent time the sun is not shielded by clouds that are thick enough to produce a shadow, as follows:

a. 100 percent sunshine (e.g., no cloud cover) = 1.0

b. 50 percent sunshine (e.g., 50 percent cloud cover) = 0.5

c. 0 percent sunshine (e.g., full cloud cover) = 0.0

3. Plug these variables into the following equation to determine the adjusted temperature:

$$T \text{ (adjusted)} = T \text{ (actual)} + (13 \times \text{fraction sunshine})$$

C. Body Temperature Monitoring

## **URS** SAFETY MANAGEMENT STANDARD

### **Heat Stress**

---

1. Monitor oral body temperature to determine if employees are adequately dissipating heat buildup. Ear probe thermometers which are adjusted to oral temperature are convenient and the preferred method of measurement. Determine work/rest regimen as follows:
  - a. Measure oral body temperature at the end of the work period.
  - b. If temperature exceeds 99.6 °F (37.5 °C), shorten the following work period by 1/3 without changing the rest period.
  - c. If temperature still exceeds 99.6 °F (37.5 °C), shorten the following work period by 1/3.
  - d. Do not allow a worker to wear impermeable PPE when his/her oral temperature exceeds 100.6 °F (38.1°C).
2. Oral body temperatures are to be obtained prior to the employee drinking water or other fluids.

#### **D. Pulse Rate Monitoring**

1. Take the radial (wrist) pulse as early as possible in the rest period.
  - a. If the heart rate exceeds 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third.
  - b. If the heart rate still exceeds 110 beats per minute at the next rest cycle, shorten the following work cycle by an additional one-third.
- E. Record monitoring results on Heat Stress Monitoring Form (Attachment 18-2).
- F. Investigate the use of auxiliary cooling devices in extreme heat conditions.
- G. Conduct briefings for employees regarding health hazards and control measures associated with heat stress whenever conditions require the implementation of heat stress monitoring. Review the information provided in Attachment 18-3.

## **URS** SAFETY MANAGEMENT STANDARD

### **Heat Stress**

---

- H. Provide water and electrolyte replacement drinks fluids as described in Attachment 18-3.
- I. Allow employees who are not accustomed to working in hot environments appropriate time for acclimatization (see Attachment 18-3).
- J. Provide break areas as described in Attachment 18-3.

#### **5. Documentation Summary**

File these records in the Project Safety File.

- A. Heat Stress Monitoring Forms.
- B. Employee Safety Briefing Verification Forms.

#### **6. Resources**

- A. NIOSH - "Working in Hot Environments"
- B. AFL-CIO Building Trades Division - "Heat Stress in Construction"
- C. Attachment 18-1 - Initial Work Monitoring Cycles
- D. Attachment 18-2 - Heat Stress Monitoring Record
- E. Attachment 18-3 - Informational Supplement

# URS SAFETY MANAGEMENT STANDARD

## Cold Stress

---

### 1. Applicability

This procedure applies to URS projects where field crews are working outdoors in damp and cool (below 50° F or 10°C) conditions or anytime temperatures are below 32°F or 0°C.

### 2. Purpose and Scope

The purpose of this procedure is to protect project personnel from the following conditions:

**Hypothermia:** Hypothermia results when the body loses heat faster than it can be produced. When this situation first occurs, blood vessels in the skin constrict in an attempt to conserve vital internal heat. Hands and feet are first affected. If the body continues to lose heat, involuntary shivers begin. This is the body's way of attempting to produce more heat, and it is usually the first real warning sign of hypothermia. Further heat loss produces speech difficulty, confusion, loss of manual dexterity, collapse, and finally death. Wet clothes or immersion in cold water greatly increases the hypothermia risk. The progressive clinical presentation of hypothermia may be seen in Attachment 59-1.

**Frostbite:** Local injury resulting from cold is included in the generic term frostbite. There are several degrees of damage. Frostbite can be categorized into:

**Frost Nip or Initial Frostbite:** (1st degree frostbite) Characterized by blanching or whitening of skin.

**Superficial Frostbite:** (2nd degree frostbite) Skin has a waxy or white appearance and is firm to the touch, but tissue beneath is resilient. Blistering and peeling of the frozen skin will follow exposure.

**Deep Frostbite:** (3rd degree frostbite) Tissues are cold, pale, and solid; extremely serious injury with possible amputation of affected area.

Frostbite can occur without hypothermia when the extremities do not receive sufficient heat. The toes, fingers, cheeks, and ears are the most commonly affected. Frostbite occurs when there is freezing of the fluids around the cells of the affected tissues. The first symptom of frostbite is an uncomfortable sensation of coldness, followed by numbness. There may be tingling, stinging, or cramping. Contact by the skin with tools or other metal objects below 20°F (-7°C) may result in contact frostbite.

## **URS** SAFETY MANAGEMENT STANDARD

### **Cold Stress**

---

#### **3. Implementation**

Field Activities - Implementation of this procedure is the responsibility of the Project Manager and the field supervisor.

#### **4. Requirements**

- A. *Carefully plan work anticipated to be performed in cool or cold conditions. Include costs in project budgets for specialized equipment and supplies needed to complete the field activities.*
- B. Monitor weather forecasts immediately prior to entering the field.
- C. Observe and monitor weather conditions such as ambient temperature, wind speed, and precipitation while in the field. Use Attachment 59-2 to determine wind chill.
- D. Wear at least 3 layers of clothing.

An outer layer to break the wind and allow some ventilation (e.g., Gortex® or nylon)

A middle layer of down, wool, or similar materials to provide insulation

An inner layer of cotton or synthetic weave to allow ventilation

*In addition:*

Wear a hat. Up to 40% of body heat can be lost when the head is left exposed.

Wear insulated boots or other insulated footwear.

Keep a change of dry clothing available in case work clothes become wet.

Do not wear tight clothing. Loose clothing allows better ventilation.

- E. Use the following work practices:

Use Attachment 59-3 to establish work/rest cycles in cold weather.

Drink plenty of warm liquids. It is easy to become dehydrated in cold

## **URS** SAFETY MANAGEMENT STANDARD

### **Cold Stress**

---

weather.

Avoiding caffeine and alcohol. Alcohol will accelerate loss of body heat.

Eat high calorie snacks to help maintain body metabolism.

If possible, heavy work should be scheduled during the warmer parts of the day. Take breaks out of the cold.

Work in pairs to keep an eye on each other and watch for signs of cold stress.

NEVER IGNORE SHIVERING. Persistent or violent shivering is a clear warning that you are on the verge of hypothermia.

Avoid exhaustion.

F. When possible, use the following engineering controls:

Provide shelter to escape cold, wind and precipitation

Provide a source of heat (such as warm packs or portable heaters)

Use insulating materials on equipment handles when temperatures drop below 30°F or -1°C.

G. Watch for symptoms and signs of hypothermia (see Attachment 59-1).

H. Treat cold stress illness as follows:

Hypothermia: Prompt treatment of hypothermia is essential. Once the body temperature drops below 95°F or 35°C, the loss of temperature control occurs, and the body can no longer rewarm itself. Initial treatment includes reducing heat loss by moving the individual out of the wind and cold, removal of wet clothing, applying external heat (such as a pre-warmed sleeping bag, electric blanket, or body-heat from other workers) and follow-up medical attention.

Frost Bite: The initial treatment for frostbite includes bringing the individual to a warm location, removal of clothing in the affected area, and, **if help is delayed**, placing the affected parts in warm (100° to 104° F or 38° to 40°C) water. Do not massage or rub the frostbite area. After

## **URS** SAFETY MANAGEMENT STANDARD

### **Cold Stress**

---

the initial treatment, wrap the affected area loosely in sterile gauze and seek medical attention.

For further discussion on Cold Stress treatment, please refer to Attachment 59-1

#### I. Hypothermia in Water:

Loss of body heat to the water is a major cause of deaths in boating accidents. Often the cause of death is listed as drowning; however the primary cause is often hypothermia. It should also be noted that alcohol lowers the body temperature around two to three degrees by dilating the blood vessels. Do not drink alcohol around cold water. The following table shows the effects of hypothermia in water:

<b>WATER TEMPERATURE</b>	<b>EXHAUSTION</b>	<b>SURVIVAL TIME</b>
32.5° F (0°C)	Under 15 min.	Under 15 to 45 min.
32.5 to 40°F (0 – 4°C)	15 to 30 min.	30 to 90 min.
40 to 50°F (4 – 10°C)	30 to 60 min.	1 to 3 hrs.
50 to 60°F (10 – 16°C)	1 to 2 hrs.	1 to 6 hrs.
60 to 70°F (16 – 21°C)	2 to 7 hrs.	2 to 40 hrs.
60 to 70°F (16 – 21°C)	3 to 12 hrs.	3 hrs. to indefinite
Over 80°F (27°C)	Indefinite	Indefinite

#### SOME POINTS TO REMEMBER:

Wear your PFD. Review SMS 053 - Marine Safety and Boat Operations.

If water is less than 50°F (10°C), wear a wet suit or dry suit for work in water (e.g., wading) or if significant potential to fall in water.

While in the water, do not attempt to swim unless to reach nearby safety. Unnecessary swimming increases the rate of body heat loss. Keep your head out of the water. This will increase your survival time.

## **URS** SAFETY MANAGEMENT STANDARD

### **Cold Stress**

---

Keep a positive attitude about your rescue. This will increase your chances of survival.

If there is more than one person in the water, huddling is recommended.

#### **J. Training**

Workers at risk of developing hypothermia or cold-related injury will be trained in:

recognition of the signs and symptoms of cold injury or impending hypothermia,

proper re-warming procedures and appropriate first aid treatment,

proper use of clothing,

proper eating and drinking practices

safe work practices appropriate to the work that is to be performed.

### **5. Documentation Summary**

File these records in the Project Safety File.

- A. Completed Project Hazard Analysis form (see Health and Safety Website – "Hazard Analysis")
- B. Cold stress training records

### **6. Resources**

- A. OSHA Fact Sheets – "Protecting Workers in Cold Environments"  
[http://www.osha-slc.gov/OshDoc/Fact\\_data/FSNO98-55.html](http://www.osha-slc.gov/OshDoc/Fact_data/FSNO98-55.html)
- B. Attachment 59-1 "Signs of, and Treatment for, Cold Stress related Illnesses"
- C. Attachment 59-2(a) "Wind Chill Index" (units in °F and miles/hour)
- D. Attachment 59-2(b) "Wind Chill Index" (units in °C and Kilometers/hour)
- E. Attachment 59-3 "TLVs Work/Warm-up Schedule for Outside Workers based on a Four-hour Shift"
- F. OSHA Publication 3156 – Quick Reference Card  
<http://www.osha.gov/Publications/osh3156.pdf>

# URS SAFETY MANAGEMENT STANDARD

## Cold Stress

### Attachment 59-1 Signs of and Treatment for Cold Stress Related Illnesses

Condition	Signs/Symptoms	Treatment
<b>Hypothermia Mild</b> (98° - 90° F) (36° - 32°C)	shivering lack of coordination stumbling, fumbling hands slurred speech memory loss pale, cold skin	move to warm area stay active remove wet clothes and replace with dry clothes or blankets cover the head drink warm (not hot) sugary drink
<b>Hypothermia Moderate</b> (90° - 86° F) (32° - 30°C)	shivering stops unable to walk or stand confused and irrational	All of the above, plus Call for an ambulance Cover all extremities completely Place very warm objects, such as hot packs or water bottles on the victim's head, neck, chest and groin
<b>Hypothermia Severe</b> (86° - 78° F) (30° - 26°C)	severe muscle stiffness very sleepy or unconscious ice cold skin death	Call for an ambulance Treat the victim very gently Do not attempt to re-warm -- the victim should receive treatment in a hospital
<b>Frostbite</b>	Cold, tingling, stinging or aching feeling in frostbitten area; numbness Skin color turns red, then purple, then white or very pale skin, cold to the touch Blisters in severe cases	Seek medical attention Do not rub the area Wrap in soft cloth If help is delayed, immerse in warm, not hot, water
<b>Trench Foot</b>	Tingling, itching or burning sensation Blisters	Soak feet in warm water, then wrap with dry cloth bandages Drink a warm, sugary drink

Source: Princeton University, Department of Environmental Health and Safety, posted 2/2/99.

**URS** SAFETY MANAGEMENT STANDARD  
**Cold Stress**

**Attachment 59-2(a)**  
**Wind-Chill Index<sup>1</sup>**  
(miles per hour and °F.)

		ACTUAL THERMOMETER READING ( F )									
		50	40	30	20	10	0	-10	-20	-30	-40
Wind speed in mph		EQUIVALENT TEMPERATURE ( F )									
calm		50	40	30	20	10	0	-10	-20	-30	-40
5		48	37	27	16	6	-5	-15	-26	-36	-47
10		40	28	16	4	-9	-21	-33	-46	-58	-70
15		36	22	9	-5	-18	-36	-45	-58	-72	-85
20		32	18	4	-10	-25	-39	-53	-67	-82	-96
25		30	16	0	-15	-29	-44	-59	-74	-88	-104
30		28	13	-2	-18	-33	-48	-63	-79	-94	-109
35		27	11	-4	-20	-35	-49	-67	-82	-98	-113
40		26	10	-6	-21	-37	-53	-69	-85	-100	-116
Over 40 mph		Little Danger				Increasing Danger			Great Danger		
(little added effect)		(for properly clothed person)				(Danger from freezing of exposed flesh)					

<sup>1</sup> Source: Fundamentals of Industrial Hygiene, Third Edition. Plog, B.A., Benjamin, G.S., Kerwin, M.A., National Safety Council, 1988

# URS SAFETY MANAGEMENT STANDARD

## Cold Stress

### Attachment 59-2(b) Wind-chill Index<sup>1</sup> (Kilometers per hour and °C.)

Estimated wind speed  (in km/h)	Actual temperature reading (°C)												
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
0 (Calm)	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50
8	9	3	-2	-7	-12	-18	-23	-28	-33	-38	-44	-49	-54
16	4	-2	-7	-14	-20	-27	-33	-38	-45	-50	-57	-63	-69
24	2	-5	-11	-18	-25	-32	-38	-45	-52	-58	-65	-72	-78
32	0	-7	-14	-21	-28	-35	-42	-50	-56	-64	-71	-78	-84
40	-1	-8	-16	-24	-31	-38	-46	-53	-60	-67	-76	-82	-90
48	-2	-10	-17	-25	-33	-40	-48	-55	-63	-70	-78	-86	-94
56	-3	-11	-18	-26	-34	-42	-50	-58	-65	-73	-81	-89	-96
64	-3	-11	-19	-27	-35	-43	-51	-59	-66	-74	-82	-90	-98
(Wind speeds greater than 64 km/h have little additional effect.)	<b>LOW HAZARD</b> Risk of exposed, dry skin being affected in less than one hour. Awareness of hazard low.			<b>INCREASING HAZARD</b> Danger from freezing of exposed flesh within one minute.				<b>HIGH HAZARD</b> Flesh may freeze within 30seconds.					

The table was originally developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA, and is adapted from the 1995-1996 *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*, published by the ACGIH. The ACGIH publication provides the equivalent table with temperature in degrees Fahrenheit and wind speed in mph.

Equivalent chill temperature requiring dry clothing to maintain core body temperature above 36°C (96.8°F).

**URS SAFETY MANAGEMENT STANDARD**  
**Cold Stress**

**Attachment 59-2(b)**  
**Wind-chill Index<sup>1</sup>**  
(Kilometers per hour and °C.)

Estimated wind speed	Actual temperature reading (°C)													
	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	
(in km/h)	Equivalent chill temperature (°C)													
0 (Calm)	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45	-50	
8	9	3	-2	-7	-12	-18	-23	-28	-33	-38	-44	-49	-54	
16	4	-2	-7	-14	-20	-27	-33	-38	-45	-50	-57	-63	-69	
24	2	-5	-11	-18	-25	-32	-38	-45	-52	-58	-65	-72	-78	
32	0	-7	-14	-21	-28	-35	-42	-50	-56	-64	-71	-78	-84	
40	-1	-8	-16	-24	-31	-38	-46	-53	-60	-67	-76	-82	-90	
48	-2	-10	-17	-25	-33	-40	-48	-55	-63	-70	-78	-86	-94	
56	-3	-11	-18	-26	-34	-42	-50	-58	-65	-73	-81	-89	-96	
64	-3	-11	-19	-27	-35	-43	-51	-59	-66	-74	-82	-90	-98	
(Wind speeds greater than 64 km/h have little additional effect.)	LOW HAZARD Risk of exposed, dry skin being affected in less than one hour. Awareness of hazard low.				INCREASING HAZARD Danger from freezing of exposed flesh within one minute.				HIGH HAZARD Flesh may freeze within 30seconds.					

The table was originally developed by the U.S. Army Research Institute of Environmental Medicine, Natick, MA, and is adapted from the 1995-1996 *Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices*, published by the ACGIH. The ACGIH publication provides the equivalent table with temperature in degrees Fahrenheit and wind speed in mph.

Equivalent chill temperature requiring dry clothing to maintain core body temperature above 36°C (96.8°F).

# URS SAFETY MANAGEMENT STANDARD

## Cold Stress

### Attachment-59-3

#### TLVs Work/Warm-up Schedule for Outside Workers based on a Four-hour Shift\*

The ACGIH has adopted the guidelines developed by the Saskatchewan Labour for working outdoors in cold weather conditions. These guidelines recommend protective clothing and limits on exposure time. The recommended exposure times are based on the wind chill factor, a scale based on air temperature and wind speed. The work-break schedule applies to any four-hour period with moderate or heavy activity. The warm-up break periods are of 10-minute duration in a warm location. The schedule assumes that "normal breaks" are taken once every two hours. At the end of a 4-hour period, an extended break (e.g. lunch break) in a warm location is recommended. More information is available in the ACGIH publications "2000 TLVs and BEIs" and "Documentation of TLVs and BEIs" and on the Saskatchewan Labour web page "[Cold Conditions Guidelines for Outside Workers](#)".

Air Temperature - Sunny Sky											
No Noticeable Wind		5 mph Wind		10 mph Wind		15 mph Wind		20 mph Wind			
°C (approx.)	°F (approx.)	Max. work Period	No. of Breaks*	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks	Max. Work Period	No. of Breaks
-26° to -28°	-15° to -19°	(Norm breaks) 1		(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4
-29° to -31°	-20° to -24°	(Norm breaks) 1		75 min.	2	55 min.	3	40 min.	4	30 min.	5
-32° to -34°	-25° to -29°	75 min.	2	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease	
-35° to -37°	-30° to -34°	55 min.	3	40 min.	4	30 min.	5	Non-emergency work should cease			
-38° to -39°	-35° to -39°	40 min.	4	30 min.	5	Non-emergency work should cease					
-40° to -42°	-40° to -44°	30 min.	5	Non-emergency work should cease							
-43° & below	-45° & below	Non-emergency work should cease									

\*2000 TLVs and BEIs - Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices. Cincinnati : American Conference of Governmental Industrial Hygienists (ACGIH), 2000 - page 176. Adopted from Saskatchewan Labour "[Cold Conditions Guidelines for Outside Workers](#)"

## **URS SAFETY MANAGEMENT STANDARD**

### **Noise and Hearing Conservation**

---

#### **1. Applicability**

This procedure applies to URS Corporation facilities and field operations where URS Corporation personnel may encounter noise exposures that may exceed 85 decibels, measured using an "A" weighted scale (dBA), as an 8-hour time weighted average (TWA).

#### **2. Purpose and Scope**

The purpose of this procedure is to protect employees from hazardous noise exposures and to prevent hearing loss.

#### **3. Implementation**

Office/Lab locations - High noise is unlikely to be encountered at URS offices; however, if applicable, the implementation of this program is the responsibility of the Office Manager.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

#### **4. Requirements**

##### **A. General**

The use of hearing protectors is required in any location where powered or motorized equipment or any other noise source could reasonably be expected to exceed 85 dBA. Use of hearing protectors may only be discontinued when noise levels are verified to be less than 85 dBA through a properly conducted noise survey. Whenever information indicates that any employee's exposure may equal or exceed an 8-hour TWA of 85 dBA, the project manager or location manager will be responsible to enforce the proper use of hearing protectors.

##### **B. Hearing Protectors**

1. Require that at least two (2) types of hearing protectors are available to employees free of charge, preferably a plug and a muff type.

## **URS SAFETY MANAGEMENT STANDARD**

### **Noise and Hearing Conservation**

---

#### 2. Minimum Noise Reduction Ratings (NRR)

Hearing protectors issued must have the following minimum NRR:

Ear Plug	Muffs
29 dBA	27 dBA

3. Require that hearing protectors are used in accordance with manufacturer's specifications and thus effectively protect hearing.

#### C. Noise Surveys

1. Noise surveys must be conducted in a manner that reasonably reflects the exposure of the affected employees. Surveys must be conducted under the supervision of a URS Health, Safety, and Environment (HSE) Representative.
2. Sound level meters and audio dosimeters used to determine employee exposure to noise sources must be Type II (accurate to within +/- 2 dBA), operated in "slow" response, on the "A" scale, and be calibrated to factory guidelines (including periodic factory recalibration).

#### D. Noise Controls

Eliminate noise sources to the extent possible. Examples of controls that must be considered include:

1. Addition or replacement of mufflers on motorized equipment.
2. Addition of mufflers to air exhausts on pneumatic equipment.
3. Following equipment maintenance procedures to lubricate dry bearings.
4. Isolation of loud equipment with barriers.
5. Replacement of loud equipment with newer and quieter models.

#### E. Audiometric Exams

##### 1. Tests

Details on the medical surveillance program (including audiometric testing) are included in SMS 24.

## **URS SAFETY MANAGEMENT STANDARD**

### **Noise and Hearing Conservation**

---

Audiometric tests shall be performed by a person meeting the requirements described in 29 CFR 1910.95(g)(3). Within 6 months of an employee's first exposure at or above the action level, a valid baseline audiogram shall be established against which subsequent audiograms can be compared. Testing to establish a baseline audiogram shall be preceded by 14 hours without exposure to noise. Hearing protectors may be used as a substitute for the requirement that baseline audiogram shall be preceded by 14 hours without exposure to workplace noise. The medical surveillance provider shall notify employees of the need to avoid high levels of non-occupational noise exposure during the 14-hour period immediately preceding the audiometric examination. For multi-year projects, an annual audiogram shall be obtained for each employee exposed at or above an 8-hour time-weighted average of 85 decibels.

Each employee's annual audiogram shall be compared to that employee's baseline audiogram to determine if the audiogram is valid and if there is a standard threshold shift (STS). A standard threshold shift is a change in hearing threshold relative to the baseline audiogram of an average of 10 dB or more at 2000, 3000, and 4000 Hz in either ear. If the annual audiogram shows that an employee has suffered a STS, the employer will obtain a retest within 30 days and consider the results in assessing an STS as the annual audiogram. The audiologist, otolaryngologist, or physician shall review problem audiograms and shall determine whether there is a need for further evaluation. If an STS has occurred, the medical surveillance provider will notify the employee within 21 days of the determination.

#### **2. Standard Threshold Shifts**

If an employee's test results show a confirmed STS, their hearing protection will be evaluated and refitted, and a medical evaluation may be required.

#### **F. Training**

Verify that each employee who must work in a noisy environment is current on required Hearing Conservation Training. Training must include the following topics:

##### **1. The effects of noise on hearing.**

## **URS SAFETY MANAGEMENT STANDARD**

### **Noise and Hearing Conservation**

---

2. The purpose of hearing protectors.
3. The advantages and disadvantages of various types of hearing protectors.
4. The attenuation of various types of hearing protection.
5. The selection, fitting, care, and use of hearing protectors.
6. The purpose of audiometric testing.
7. An explanation of the audiometric testing procedure.

#### **5. Documentation Summary**

A. File these records in the Office Safety Filing System:

1. Noise surveys, when applicable.
2. Training Records.

B. File noise surveys, when applicable, in the Project Safety File:

#### **6. Resources**

- A. U.S. OSHA Standard – Occupational noise exposure – 29 CFR 1910.95
- B. U.S. OSHA Construction Standard – Occupational noise exposure – 29 CFR 1926.52
- C. U.S. OSHA Technical Links - Noise and Hearing Conservation
- D. American Industrial Hygiene Association: The Occupational Environment – Its Evaluation and Control, Chapter 20. Fairfax, VA: 1997
- E. National Hearing Conservation Association web site
- F. URS SMS 24 - Medical Screening and Surveillance

# **URS SAFETY MANAGEMENT STANDARD**

## **Heavy Equipment Operations**

---

### **1. Applicability**

This procedure applies to URS field projects where heavy equipment is in operation.

### **2. Purpose and Scope**

The purpose of this procedure is to require that heavy equipment is operated in a safe manner, that the equipment is properly maintained and that ground personnel are protected.

### **3. Implementation**

Field Activities - Implementation of this procedure is the responsibility of the Project Manager.

### **4. Requirements**

#### **A. Authorized Operators**

1. Evaluate operators through documentable experience (resume) and a practical evaluation of skills.
2. Allow only qualified operators to operate equipment.
3. Prohibit equipment from being operated by any personnel who have not been specifically authorized to operate it.
4. Maintain a list of operators for the project and the specific equipment that they are authorized to operate.
5. Require operators to use seat belts at all times in all equipment and trucks.
6. Prohibit personnel other than the operator from riding in or on the equipment unless additional seating (with seat belts) is provided by the manufacturer.
7. Operators shall maintain three points of contact whenever entering and exiting a piece of equipment.
8. Brief operators on the following rules of operation:
  - a. Operators are in control of their work area.

## **URS** SAFETY MANAGEMENT STANDARD **Heavy Equipment Operations**

---

- b. Equipment will be operated in a safe manner and within the constraints of the manufacturer's Operation Manual.
- c. Operators will stop work whenever unauthorized ground personnel or equipment enter their work area and only resume work when the area has been cleared.

### **B. Ground Personnel**

- 1. Require that ground personnel on the site have received training and comply with the following rules of engagement:
  - a. All ground personnel must wear high visibility protective vests when in work areas with any operating equipment.
  - b. Ground personnel will stay outside of the swing zone or work area of any operating equipment.
  - c. Ground personnel may only enter the swing or work area of any operating equipment when:
    - 1. They have attracted the operator's attention and made eye contact.
    - 2. The operator has idled the equipment down and grounded all extensions.
    - 3. The operator gives the ground personnel permission to approach.
  - d. Ground personnel shall never walk or position themselves between any fixed object and running equipment or between two running pieces of equipment.

### **C. Equipment**

- 1. Maintain operations manuals at the site for each piece of equipment that is present on the site and in use.
- 2. Require that operators are familiar with the manual for the equipment and operate the equipment within the parameters of the manual.

## **URS SAFETY MANAGEMENT STANDARD**

### **Heavy Equipment Operations**

---

3. Require that all equipment is provided with roll-over protection systems (ROPS). Tracked excavators are exempt from ROPS requirements but must have a cab which provides protection from overhead hazards
4. Verify that seatbelts are present and functional in all equipment.
5. Prohibit the use of equipment which has cab glass which is cracked, broken or missing.
6. Require that backup alarms are functional on all trucks and equipment. Tracked excavators must have bidirectional alarms or the operator must be provided with a spotter whenever tracking in either direction.
7. Require all extensions such as buckets, blades, forks, etc. to be grounded when not in use.
8. Require brakes to be set and wheels chocked (when applicable) when not in use.

#### **D. Inspection and Maintenance**

1. Require daily inspections of equipment by operators using Attachment 19-1.
2. Prohibit use of equipment deemed to be unsafe as a result of daily inspection until required repairs or maintenance have been completed.
3. Conduct maintenance as prescribed by the manufacturer in the Operations Manuals for each piece of equipment.
4. During maintenance/repair, require that:
  - a. Motors are turned off.
  - b. All extensions are grounded or securely blocked.
  - c. Controls are in a neutral position.
  - d. Brakes are set.

#### **5. Documentation Summary**

## **URS** SAFETY MANAGEMENT STANDARD **Heavy Equipment Operations**

---

File the following documents in the Project Health and Safety File.

- A. List of authorized operators.
- B. Operator qualifications.
- C. Daily Equipment Inspection Logs.
- D. Site briefing documentation for operator rules and ground personnel "rules of engagement".

### **6. Resources**

- A. U.S. OSHA Standard - Motorized Vehicles and Mechanized Equipment - 29 CFR 1926, Subpart O
- B. National Association of Demolition Contractors – Safety Manual
- C. Queensland Workplace Health and Safety - Competency Standard for Users & Operators of Industrial Equipment
- D. Attachment 19-1 - Equipment Inspection Form

# **URS** SAFETY MANAGEMENT STANDARD

## **Utility Clearances And Isolation**

---

### **1. Applicability**

This procedure applies to URS projects where personnel may encounter subsurface or overhead utilities.

### **2. Purpose and Scope**

Many field activities are conducted near aboveground and underground utilities. The primary purpose of this Standard is to establish operating requirements that will permit employees to work safely in the vicinity of electrical, natural gas, fuel, water, and other utility systems and installations. The secondary purpose is to prevent economic damage to utility systems from operations associated with project-related activities.

The term "utility clearance" includes

- A. The positive locating of utility systems in or near the work area.
- B. A signed statement by an appropriate representative attesting to the location of underground utilities and/or the positive de-energizing (including lockout) and testing of electrical utilities.

Note that in some cases, utility representatives may deem it appropriate or necessary to use insulating blankets to isolate a power line. This is an acceptable alternative to positive de-energizing; however, only utility representatives can make the determination.

"Contact" with overhead power lines is considered to occur when equipment is closer to power lines than permitted by the criteria in the table in Section 4.0.C.2.b below. (See note for U.K. operations).

### **3. Implementation**

Field Operations - Implementation of this procedure is the responsibility of the Project Manager.

### **4. Requirements**

- A. Time for Completion

Complete utility clearances prior to the start of any work in the area of the utility that could feasibly result in contact with or damage to that utility.

- B. Local Regulations

## **URS SAFETY MANAGEMENT STANDARD**

### **Utility Clearances And Isolation**

---

Research local and state codes and regulations regarding utility locating and isolation requirements. Utility companies and locating services are among the appropriate resources.

#### **C. Overhead Power Lines**

##### **1. Proximity to Power Lines**

No work is to be conducted within 50 feet (15 meters) of overhead power lines without first contacting the utility company to determine the voltage of the system. No aspect of any piece of equipment is to be operated within 50 feet (15 meters) of overhead power lines without first making this determination.

##### **2. Operations adjacent to overhead power lines are **PROHIBITED** unless one of the following conditions is satisfied:**

- a. Power has been shut off, positive means (such as lockout) have been taken to prevent the lines from being energized, lines have been tested to confirm the outage, and the utility company has provided a signed certification of the outage.
- b. The minimum clearance from energized overhead lines is as shown in the table below, or the equipment will be repositioned and blocked so that no part, including cables, can come within the minimum clearances shown in the table.

<b>MINIMUM DISTANCES FROM POWERLINES</b>	
Nominal System kV	Minimum Required Distance
0-50	10 feet (3 meters)
51-100	12 feet (3.6 meters)
101-200	15 feet (4.6 meters)
201-300	20 feet (6.1 meters)
301-500	25 feet (7.6 meters)
501-750	35 feet (10.7 meters)
751-1000	45 feet (13.7 meters)

Note: For U.K. operations, the specific safe distance is determined by the utility company.

- c. The power line(s) has been isolated through the use of insulating blankets which have been properly placed by the utility. If insulating blankets are used, the utility will determine

## **URS SAFETY MANAGEMENT STANDARD**

### **Utility Clearances And Isolation**

---

the minimum safe operating distance; get this determination in writing with the utility representative's signature.

3. All inquiries regarding electric utilities must be made in writing and a written confirmation of the outage/isolation must be received by the Project Manager prior to the start of the task which may impact the utility.

#### **D. Underground Utilities**

1. Do not begin subsurface work (e.g., trenching, excavation, drilling, etc.) until a check for underground utilities and similar obstructions has been conducted. The use of as-built drawings must be confirmed with additional geophysical or other surveys.
2. Contact utility companies or the state/regional utility protection service at least two (2) working days prior to excavation activities to advise of the proposed work, and ask them to establish the location of the utility underground installations prior to the start of actual excavation. Where these services are unavailable (e.g., private properties), contract with an independent utility locating service to perform an evaluation of subsurface utilities.
3. Obtain utility clearances for subsurface work on both public and private property. Clearances are to be in writing, signed by the party conducting the clearance.
4. Protect and preserve the markings of approximate locations of facilities until the markings are no longer required for safe and proper excavations. If the markings of utility locations are destroyed or removed before excavation commences or is completed, the Project Manager must notify the utility company, utility protection service, or the utility locating service to inform them that the markings have been destroyed.
5. Do not conduct mechanical-assisted subsurface work (e.g., powered drill rig, mechanical excavator, etc.) within five (5) feet (1.5 meters) of a confirmed or suspected utility or other subsurface structure. Confirm minimum distances for mechanical-assisted subsurface work with the utility owner, as distances beyond this five foot minimum may be required.
6. Subsurface work within five feet (1.5 meters) of a confirmed or suspected utility or other subsurface structure must be done by

## **URS SAFETY MANAGEMENT STANDARD**

### **Utility Clearances And Isolation**

---

hand (e.g., hand auger, shovel) to the point where the obstruction is visually located and exposed. Once the obstruction location is confirmed in this manner, mechanical-assisted work may commence.

7. Reference SMS 013, "Excavation Safety" for additional information regarding subsurface operations.

#### **E. Training**

Conduct a briefing for site employees regarding the hazards associated with working near the utilities and the means by which the operation will maintain a safe working environment. Detail the method used to isolate the utility and the hazards presented by breaching the isolation.

### **5. Documentation Summary**

File these records in the Safety Filing System:

1. Documents requesting utility clearance.
2. Documents confirming utility clearance.
3. Training/briefing documentation of each isolation.

### **6. Resources**

- A. Utility Locating Services (typically under "Utility" in the Yellow Pages)
- B. NIOSH Alert - Preventing Electrocutions from Contact Between Cranes and Power Lines
- C. One Call Utility Locating List
- D. National Utility Locating Contractor's Association
- E. U.K. - Health and Safety Executive GS6

# URS SAFETY MANAGEMENT STANDARD

## Manual Material Handling

---

### 1. Applicability

This procedure applies to URS operations where personnel perform manual handling of materials. For this procedure, manual material handling (MMH) is defined as the movement of items by lifting, lowering, pushing, pulling, carrying, holding, or restraining.

### 2. Purpose and Scope

The purpose of this procedure is to prevent common injuries caused by the practice of MMH. Immediate or short-term effects include lacerations, bruises, and muscle fatigue. Long-term effects include chronic pain, typically in the lower back.

### 3. Implementation

Office/Warehouse Locations— Implementation of this procedure is the responsibility of the Office/Warehouse Manager.

Field Activities— Implementation of this procedure is the responsibility of the Project Manager.

### 4. Requirements

#### A. General

1. Prior to lifting, lowering, pushing, pulling, carrying, holding, or restraining an object of any significant size or weight, employees must evaluate the object and the required task to determine if they can handle the object safely.
2. If the employee has any doubt about whether they can safely move the object by themselves, additional manual or mechanical help should be obtained.
3. Healthy employees with no physician imposed restrictions should lift and carry a maximum of 50 pounds (23 kilograms) using proper lifting and carrying techniques. Physical and workplace factors may reduce this recommended weight limit (RWL) significantly and should be considered prior to attempting lifts of this magnitude.
4. An employee's personal "safe" MMH capability is defined as the employee's personal capability to manually lift, carry, push, or pull an object alone. This "safe" limit must consider the employee's past experience and training with MMH, health status, and any other personal or environmental characteristics affecting the employee's ability to perform these tasks. An employee's "safe" MMH capability is typically at or below the calculated RWL.
5. An MMH task that exceeds an employee's personal "safe" MMH capability or RWL should be brought to the attention of the Project Manager.
6. If, due to a medical or health condition, the employee's physician or the employee has set a personal "safe" MMH capability, then appropriate medical documentation must be provided to the Project Manager to define these limits.
7. A recommended RWL can be calculated using the factors described in Attachment 69-1. The weight limit derived from these calculations is considered to be a load that over 99% of men and over 75% of women can safely handle without application of engineering or administrative controls. **Implementation of the calculations in Attachment 69-1 should only be attempted with the assistance of a safety professional knowledgeable in the application of**

# **URS**

## **SAFETY MANAGEMENT STANDARD**

### **Manual Material Handling**

---

**these factors. The calculations are intended to determine RWLs for repetitive lifting scenarios rather than occasional lifts.**

#### **B. Pre-Planning**

1. If a heavy object is to be moved to another location, the safest transport route should be determined prior to the activity.
2. The area around the object and the route over which it will be transported should be checked for slip, trip, and fall hazards. Hazards should be removed prior to initiation of the task.
3. The object to be moved should be inspected for grasping or handling hazards, including slivers, sharp edges, grease, water, etc. Eliminate or abate any identified hazards where possible. Safe grasping or handling points on the object should be determined.
4. The distance to be traveled and the length of time which a grip on the object must be maintained should be considered before moving objects.

#### **C. Lifting/Lowering Guidelines**

1. Reduce or eliminate manual lifting and lowering tasks where possible. Determine if there are ways to abate the safety and ergonomic hazards associated with manual lifting.
2. The recommended technique for manual lifting/lowering involves five maneuvers:
  - a. Get a firm footing. Keep your feet apart for a stable base. Put one foot slightly in front of the other.
  - b. Bend your knees. Do not bend at the waist. When grasping the object, a firm grip should be obtained before lifting/lowering.
  - c. Lift/lower with your legs. Lift/lower the load slowly and in a straight line, avoiding sudden movements.
  - d. Keep the load close to the body. Generally, the closer the load is to the body, the less force it exerts on your back.
  - e. *Keep your back straight. Do not add the weight of your body to the load. Avoid twisting.*
3. When a turn or change of direction is necessary, the object should be lifted or lowered into a carrying position, then the whole body should be turned with the feet, avoiding any trunk twisting motion.
4. Objects to be lifted to shoulder height should first be lifted to waist height, then rested on a level surface so the grasping position can be changed prior to lifting to a higher level.
5. Employees should never lift a load above their head.

#### **D. Carrying/Holding Guidelines**

1. Manual carrying is an inefficient way of transporting materials in the work place. Where possible, reduce or eliminate manual carrying tasks.
2. Employees should never carry a load above their head.

## **URS** SAFETY MANAGEMENT STANDARD

### **Manual Material Handling**

---

3. Carry an object close to the body using both hands. One-handed carries are awkward and tend to unbalance the employee.
4. Do not carry objects that are so large they will obstruct visibility.
5. Grips on an object should not be changed while carrying or holding an object. Rest the object on a secure surface prior to changing grip.
6. Avoid two person carries where possible. If an object is of a size, shape, or mass that it requires two people to carry, use two people of similar size and physique. Perform lifting of the item in unison.
7. Avoid carrying objects on stairs, particularly where the line of sight may be obstructed or the object can interfere with leg movement.

#### **E. Pushing/Pulling Guidelines**

1. Check the condition of the floor, ground, or other surface prior to pushing or pulling an object across it.
2. Be aware of the "break out" force of the object - the force at which a push or pull overcomes the frictional force between the surface and object. Adjust posture to avoid losing balance when this point is reached.
3. Get assistance when moving or guiding a large load.
4. Where possible, always push rather than pull a load.

#### **F. Workplace Design**

1. Store heavy or bulky materials at heights between the knee and shoulder to avoid the need to stretch or bend.
2. Pack or arrange items to be lifted to avoid shifting of weight in the package.
3. Design work areas to avoid the need to lift, carry, push, or pull heavy or bulky materials for extended distances.
4. Design workplaces with the following in mind.
  - a. Lifts from the floor should be avoided.
  - b. The torso should never twist while handling loads.
  - c. Asymmetrical or unbalanced one-handed lifts should be avoided.
  - d. Loads should not be lifted with sudden movements.
  - e. Loads should not be lifted over obstacles.
  - f. Loads should not be lifted at extended reaches.
  - g. Uncomfortable postures should not be necessary throughout the work cycle.
  - h. Environmental factors (e.g., task lighting, dry work surfaces, heat stress) should be considered.

#### **G. Training**

1. Require that personnel who may have MMH as part of their duties receive training that includes the following topics:

# **URS**

## **SAFETY MANAGEMENT STANDARD**

### **Manual Material Handling**

---

- a. Showing personnel how to avoid unnecessary physical stress and strain during MMH operations.
  - b. Teaching personnel to become aware of what they can comfortably handle without undue strain.
  - c. Instructing personnel on the proper use of equipment.
  - d. Teaching personnel to recognize potential hazards and how to prevent or correct them.
2. This training must be completed prior to an employee being assigned to a task that involves MMH activities.

#### **5. Documentation Summary**

Training rosters or other proof of completion of MMH training will be filed in the Project or Office Health and Safety File.

#### **6. Resources**

- A. Recommended Weight Limit Calculations (RWL) – Attachment 69-1
- B. Work Practices Guide for Manual Lifting, NIOSH  
<http://www.cdc.gov/niosh>
- C. Canadian Centre for Occupational Health and Safety  
<http://www.ccosha.ca/oshaanswers/ergonomics/mmh/>
- D. Oregon OSHA "Ergonomics of Manual Materials Handling"  
<http://www.cbs.state.or.us/external/oshapdf/workshops/206w.pdf>
- E. North Carolina Department of Labor "A Guide to Manual Materials Handling and Back Safety" <http://www.nclabor.com/oshapdf/etta/indguide/ig26.pdf>
- F. European Agency for Safety and Health at Work  
[http://uk.osha.eu.int/good\\_practice/msd.stm](http://uk.osha.eu.int/good_practice/msd.stm)

# **URS**

## **SAFETY MANAGEMENT STANDARD**

### **Biological Hazards**

---

#### **1. Applicability**

This program applies to job activities performed primarily in outdoor environments.

#### **2. Purpose and Scope**

The primary goal of this program is to eliminate or reduce illnesses and injuries transmitted by plants, insects, animals, and pathogenic agents. Although there are many animals and insects that are potentially harmful to humans (i.e. bees, spiders, bears, and rodents), this safety management standard focuses on six common biological hazards: ticks, poison plants, mosquitoes, snakes, Valley Fever, and water-borne pathogenic agents. See SMS 51 concerning Bloodborne Pathogens.

#### **3. Implementation**

The Project Manager, with support from the URS HS&E Regional Managers and Occupational Health Manager, will be responsible for implementation of this program.

#### **4. Requirements**

##### **A. Ticks**

##### **1. Precautionary Measures**

Background information: Ticks do not jump, crawl, or fall onto a person. They are picked up when clothing or hair brushes a leaf or other object the tick is on. Ticks are generally found within three feet of the ground. Once picked up, they will crawl until they find a likely site to feed. Often they will find a spot at the back of the knee, near the hairline, behind the ears, or at pressure points where clothing presses against the skin (underwear elastic, belts, neckline). The best way to prevent tick borne diseases is not to be bitten by a tick. Ticks can carry a number of diseases including:

Lyme Disease is an infection caused by the corkscrew-shaped bacteria *Borrelia burgdorferi* that is transmitted by the bite of deer tick (ixodes) and western black-legged ticks. The disease occurs in the forested areas of North America, Europe, and Asia. Symptoms which occur 3-30 days following a tick bite include: a spreading 'bulls-eye' rash, fever, fatigue, headache, and joint and muscle aches. Prompt treatment with antibiotics is essential in order to prevent more serious complications that may occur if left untreated.

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

Rocky Mountain Spotted Fever is an infection caused by the bacteria *Rickettsia rickettsii*. The disease occurs in North, Central, and South America. Other Rickettsia organisms cause disease worldwide (Mediterranean, Japan, Africa, North Asia). Symptoms which occur 2-6 days following a tick bite include: fever, nausea, vomiting, diarrhea, rash, muscle and joint pain. The disease is treated with antibiotics.

Babesiosis is caused by hemoprotezoan parasites of the genus *Babesia*. It is transmitted by the ixodid tick. The geographic distribution is worldwide. Symptoms include fever, chills, fatigue, muscle aches, and an enlarged spleen and liver. The disease is treated with anti-protozoan drugs.

Ehrlichiosis is caused by several bacteria of the genus *Ehrlichiae*. The geographic distribution is global, primarily in temperate regions. Symptoms which occur 5-10 days following a tick bite include fever, headache, fatigue, muscle aches, nausea, vomiting, diarrhea, confusion, and occasionally a rash. The disease is treated with antibiotics.

### a. Avoidance of tick habitats

Whenever possible, persons should avoid entering areas that are likely to be infested with ticks, particularly in spring and summer when nymphal ticks feed. Ticks favor a moist, shaded environment, especially that provided by leaf litter and low-lying vegetation in wooded, brushy, or overgrown grassy habitat. Both deer and rodent hosts must be abundant to maintain the life cycle of the tick.

### b. Personal Protective Equipment

1. Wear light colored clothing or white Tyvek® to allow you to see ticks that are crawling on your clothing.
2. Tuck your pant legs into your socks or boots, wear high rubber boots, or use tape to close the opening where they meet so that ticks cannot crawl up the inside of your pant legs.
3. Wear a hat, tie back long hair.
4. Apply repellents to discourage tick attachment. Repellents containing permethrin can be sprayed on boots and clothing and will last for several days. Repellents containing DEET (n,n-diethyl-

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

m-toluamide) can be applied to the skin, but will last only a few hours before reapplication is necessary. Apply according to Environmental Protection Agency guidelines to reduce the possibility of toxicity.

### c. Tick Check

1. Change clothes when you return from an area where ticks may be located.
2. Shower to wash off any loose ticks.
3. Check your entire body for ticks. Use a hand held or full-length mirror to view all parts of your body.
4. Place clothing worn in tick infested areas into the dryer for at least 30 minutes in order to kill any ticks.

### 2. Tick Removal

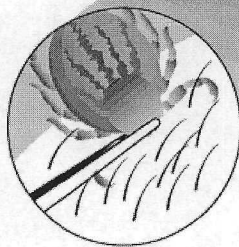
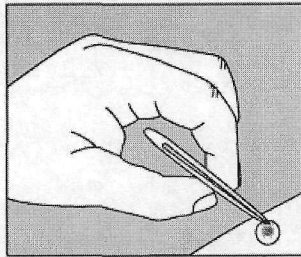
Because it takes several hours of attachment before microorganisms are transmitted from the tick to the host, prompt removal of attached or crawling ticks is an important method of preventing disease. Remember, folklore remedies of tick removal to do not work! Methods such as the use of petroleum jelly or hot matches may actually make matters worse by irritating the tick and stimulating it to release additional saliva or regurgitate gut contents, increasing the chances of transmitting disease.

The best method to remove an attached tick is with a set of fine tipped tweezers.



**URS** SAFETY MANAGEMENT STANDARD  
**Biological Hazards**

---



- a. Use fine-tipped tweezers. When possible, avoid removing ticks with bare hands.
- b. Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin. If this happens, remove mouthparts with the tweezers.
- c. Do not squeeze, crush, or puncture the body of the tick because its fluids (saliva and gut contents) may contain infectious organisms.
- d. After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
- e. Disinfect the tweezers.
- f. Save the tick for identification in case you become ill. This may help the doctor make an accurate diagnosis. Place the tick in a vial or plastic zip lock bag and put it in the freezer. Write the date of the bite on a piece of paper with a pencil and place it in the bag.

### 3. Medical Follow-Up

In most circumstances, medical treatment of persons who only have a tick bite is not recommended. However, individuals who are bitten by a tick

**URS** SAFETY MANAGEMENT STANDARD  
**Biological Hazards**

---

should seek medical attention if any signs and symptoms of tick borne disease develop over the weeks following the tick bite.

**B. Poisonous Plants**

**1. Background Information**

Poison ivy and poison oak plants are the most common cause of allergic contact dermatitis in North America. These poisonous plants can be a hazard for many various outdoor activities at work, home, and play. Skin contact with the oleoresins (urushiol) from these plants can cause an itchy, red, oozing, blistered rash in sensitive individuals. Oil content in the plants is highest in the spring and summer, however the plants are even hazardous in the winter when they have dropped their leaves. There are three types of exposure:

Direct contact: An initial skin exposure is necessary to "sensitize" the individual. Subsequent contact in a sensitized person will result in a rash appearing within 4 to 48 hours. Approximately 50-70 % of the population is sensitized. Poison plant dermatitis is usually characterized by areas of linear or streaked patches where branches of the plant brushed the skin.

Indirect contact: Skin exposure can happen indirectly. Clothing, shoes, tools, personal protective equipment and other items can be contaminated with the oils and maintain potency for months.

Airborne smoke contact: Never burn poison plants. Droplets of oil can be carried by smoke and enter the respiratory system causing a severe internal outbreak.

Poison plant rash is not contagious. Skin contact with blister fluid from an affected individual will not cause dermatitis in another sensitized person. Scratching the rash can only spread it to other parts of your body if the oil is still on your skin. After the oil has been washed off or absorbed by the skin, scratching will not spread the rash.

The most distinctive features of poison ivy and poison oak are their leaves, which are composed of three leaflets each and are green in the summer and red in the fall. Both plants also have greenish-white flowers and berries that grow in clusters. All parts of these plants are toxic.

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

Poison Ivy grows as a small plant, vine, and as a shrub. Leaves always consist of three glossy leaflets.



**Poison Ivy**

Poison Oak grows as a shrub or vine. It has three leaflets that resemble oak leaves.



**Eastern Poison Oak**

Poison Sumac grows as a woody shrub or small tree from 5 to 25 feet tall. It has 7 to 13 leaves that grow opposite each other with a leaflet at the tip.



**Poison Sumac**

### **1. Precautionary Measures**

The best approach is to learn to identify the plants and avoid them.

Wear long pants and long sleeves, boots and gloves.

Barrier skin creams may offer some protection if applied before contact.

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

Avoid indirect contact from tools, clothing or other objects that have come into contact with a crushed or broken plant. Don't forget to wash contaminated clothing and clean up contaminated equipment.

If you can wash exposed skin areas within 3-5 minutes with cold running water, you may keep the urushiol from penetrating your skin. Proper washing may not be practical in remote areas, but a small wash-up kit with pre-packaged alcohol-based cleansing tissues can be effective.

### 2. Medical Follow-Up

Home treatment: Calamine lotion and an oatmeal (one cup to a tub full of water) bath can help relieve itching. To prevent secondary skin infection, scratching is not helpful and the finger nails should be cut to avoid damage to the skin. Over-the-counter hydrocortisone cream can decrease inflammation and itching, however read the label and use according to directions.

When to see the doctor: Severe cases may require further treatment. A physician should be seen if the rash appears infected, is on the face or other sensitive body areas, or is too extensive to be easily treated at home.

### C. Mosquito Borne Diseases

#### 1. Background Information

- a. Arboviral encephalitis is a viral illness causing inflammation of the brain and is transmitted to humans by the bite of infected mosquitoes. Globally there are several strains including: Eastern equine, Japanese, La Crosse, St. Louis, West Nile, and Western equine encephalitis. Some of the strains have a vaccine. Symptoms of infection are nonspecific and flu-like: fever, headache, and tiredness. Fortunately, only a small proportion of infected people progress to encephalitis. Treatment is supportive, antibiotics are not effective.
- b. Malaria is a serious but preventable disease spread by the bite of an infected anopheline mosquito. It is caused by four species of the parasite *Plasmodium* (*P. falciparum*, *P. vivax*, *P. ovale*, and *P. malariae*). Malaria-risk areas include primarily tropical areas of Central and South America, Africa, India, Southeast Asia, and the Middle East. Symptoms of malaria which occur 8 days to 1 year after infection

**URS** SAFETY MANAGEMENT STANDARD  
**Biological Hazards**

---

include fever, shaking chills, headache, muscle ache, tiredness, jaundice, nausea, vomiting, and diarrhea. Malaria can be cured with prescription drugs.

- c. Dengue Fever is a potentially life-threatening viral illness transmitted by the bite of the Aedes mosquito, found primarily in urban areas. The disease is found in most of tropical Asia, the Pacific Islands, Central and South America, and Africa. There are four dengue virus serotypes. Symptoms include sudden onset, high fever, severe headache, joint and muscle pain, rash, nausea and vomiting. There is no specific treatment and no vaccine.
- d. Yellow Fever is a viral disease transmitted between humans by mosquitoes. It occurs only in Africa and South America. There is a vaccine that confers immunity lasting 10 years or more. Symptoms begin 3-6 days after the mosquito bite and include fever, nausea, vomiting, headache, slow pulse, muscle aches, and restlessness. Treatment is symptomatic.

## 2. Precautionary Measures

**Insect Repellent** – Use insect repellants that contain DEET. The effect should last about 4 hours. Always use according to label directions. Use only when outdoors and wash skin after coming indoors. Do not breathe in, swallow, or get into the eyes. Do not put on wounds or broken skin.

**Protective Clothing** – wear long sleeved shirts and long pants, especially from dusk to dawn. Or avoid going outdoors during these hours.

**Mosquito netting** – Travelers who will not be staying in well-screened or air conditioned rooms should use a pyrethroid containing flying insect spray in living and sleeping areas during evening and nighttime hours. Sleep under mosquito netting (bed nets) that have been sprayed with permethrin.

**Malaria prophylaxis** medications may be prescribed, however they do not provide complete protection. The type of medication given depends on the area of travel.

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

### D. Poisonous Snakes

#### 1. Background Information

No single characteristic distinguishes a poisonous snake from a harmless one except the presence of poison fangs and glands. Only in dead specimens can you determine the presence of these fangs and glands without danger. Most poisonous snakes have both neurotoxic and hemotoxic venom, however, one type is dominant and the other is weak.

- a. Hemotoxic venom. The folded-fang snakes (fangs can raise to an erect position) have venoms that affect the circulatory system, destroying blood cells, damaging skin tissues, and causing internal hemorrhaging.
- b. Neurotoxic venom. The fixed-fang snakes (permanently erect fangs) have venoms that affect the nervous system, making the victim unable to breathe.
- c. Poisonous snakes in the Americas: copperhead, coral snake, cottonmouth, and rattlesnake.
- d. Poisonous snakes in Europe: adder, viper.
- e. Poisonous snakes of Africa and Asia: viper, cobra, adder, green mamba.
- f. Poisonous snakes in Australia: copperhead, adder, taipan, tiger snake.

#### 2. Precautionary Measures

Bites occur when you don't hear or see the snake, when you step on them, or when you walk too close to them. Follow these simple rules to reduce the chance of accidental snakebite:

Don't put your hands into dark places, such as rock crevices, heavy brush, or hollow logs, without first investigating.

Don't step over a fallen tree. Step on the log and look to see if there is a snake resting on the other side.

Don't walk through heavy brush or tall grass without looking down. Look where you are walking.

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

Do not pick up any live snake. If you encounter a snake, walk around the snake, giving it plenty of room. A snake can strike half its length.

Don't pick up freshly killed snakes without first severing the head. The nervous system may still be active and a dead snake can deliver a bite.

### 3. Medical Follow-up

If you are bitten by a snake, the primary goal is to get to a hospital as soon as possible to receive professional medical evaluation and possible treatment with antivenom if warranted. Initial first aid should include: Wash the bite with soap and water. Immobilize the bitten area and keep it lower than the heart. Try to remain calm. If you are unable to reach a hospital within 30 minutes, a bandage, wrapped two to four inches above the bite, may help slow the venom. The bandage should not cut off blood flow from a vein or artery, make sure the band is loose enough that a finger can slip under it. A suction device from a commercial snakebite kit may be placed over the bite to help draw venom out of the wound.

Research has shown the following to be potentially harmful, DO NOT: apply ice, use a tourniquet, or make incisions into the wound.

### E. Valley Fever

#### 1. Background Information

Valley Fever is an illness that results from exposure to a fungal spore (*Coccidioides immitis*). It is endemic to the San Joaquin Valley in California as well as areas of Southwestern U.S., Mexico, Central and South America though it has been found in many other areas. It is particularly associated with arid soils that are not cultivated. Exposure is generally by inhalation of spores, though it may also enter through broken skin. Approximately two weeks after inhalation exposure, severe weakness and flu-like symptoms develop; severe pneumonia may occur. It may also affect the brain, bones, and joints causing disability, spinal meningitis, or death. Dermal forms of the infection can form disfiguring fungal lesions.

#### 2. Precautionary Measures

Because it is associated with arid soils, personnel should avoid locations and activities that create dust. Persons at risk of exposure include geologists, surveyors, excavators, archaeologists, etc. Dust suppression

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

methods should be employed and the use of particulate respirators should be considered for areas known to harbor the fungus. At one phase of the fungus' life cycle, cottony, spider web-like growths may be seen on the soil surface. If observed, these growths must not be disturbed and work should be relocated if possible.

### 3. Medical Follow-up

Approximately 60% of exposed persons will not have symptoms. Persons that have been in areas associated with Valley Fever should be alert to the development of flu-like symptoms, fatigue, or skin rashes two to four weeks later. Valley Fever can be treated with anti-fungal medication. Early treatment is critical as disseminated forms of the disease can result in chronic disease or death.

## F. Pathogenic organisms

### 1. Background Information

Employees who perform certain activities, such as disaster response, may be in areas where water-borne pathogens may be present. A partial list of agents includes: E. coli, Hepatitis A, typhoid, and cholera. Chemical hazards and molds and fungus may also be present. See SMS 51 for information concerning Bloodborne Pathogens.

### 2. Precautionary Measures

All work must be performed within the scope of either a Health and Safety Plan or Safe Work Plan that identifies the task hazards and specifies appropriate controls. A medical exam and/or inoculations may be required. See SMS 24, Medical Screening and Surveillance or contact the Occupational Health Manager for assistance.

Where contact with water or wet materials may occur, personnel must use protection such as impervious coveralls, boots/waders, faceshields, etc, as specified in the project Health and Safety Plan or Safe Work Plan. Personnel must protect any areas of broken skin, eyes, nose, and mouth from contact with potentially infectious materials and practice good personal hygiene before eating, drinking, etc.

### 3. Medical Follow-up

Medical evaluation and/or an inoculation schedule may be required prior to beginning work. Because early evaluation and treatment is more

## **URS** SAFETY MANAGEMENT STANDARD **Biological Hazards**

---

successful, personnel should be alert to signs and symptoms of possible pathogenic organisms and seek prompt medical evaluation if illness develops or is suspected.

### **5. Documentation Summary**

Complete and distribute a URS Incident Report form 49-1 for all work-related biological exposure incidents.

### **6. Resources**

- A. Centers for Disease Control  
<http://www.cdc.gov>
- B. U. S. Occupational Safety and Health Administration  
<http://www.osha.gov>
- C. U.S. Food and Drug Administration  
Treating and Preventing Venomous Snake Bites  
[http://www.fda.gov/fdac/features/995\\_snakes.html](http://www.fda.gov/fdac/features/995_snakes.html)

## **URS** Safety Management Standard **Personal Protective Equipment**

---

### **1. Applicability**

This program applies to URS Corporation office, shop, laboratory and field operations where the use of personal protective equipment (PPE) is warranted. Refer to SMS 42, "Respiratory Protection", for respiratory hazards. Hearing protection issues are addressed in SMS 26, "Noise and Hearing Conservation."

### **2. Purpose and Scope**

This procedure provides information on recognizing those conditions that require PPE as well as selecting PPE for hazardous activities.

### **3. Implementation**

Office/Shop/Lab Locations - Implementation of this program is the responsibility of the Office Manager.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

### **4. Requirements**

- A. Perform hazard assessments for those work activities that are likely to require the use of PPE.
  - 1. Use Attachment 29-1 to perform the assessment.
  - 2. Reevaluate completed hazard assessments when the job changes.
- B. Eliminate the hazards identified in Attachment 29-1, if possible, through engineering or administrative controls.
- C. Select PPE that will protect employees if hazards cannot be eliminated.
  - 1. See Attachment 29-1 for recommended PPE.
  - 2. Review Material Safety Data Sheets for chemicals used for PPE recommendations.
  - 3. If needed, consult with the URS Health, Safety, and Environment (HSE) Representative for assistance in selecting PPE.
- D. Provide required PPE to employees free of charge (excluding in some instances components of standard work attire such as steel-toed boots),

## **URS** Safety Management Standard **Personal Protective Equipment**

---

assuring that it fits properly and giving them a choice if more than one type is available.

E. Whenever a hazard is recognized and PPE is required, the employees will be provided with the appropriate PPE. However, when PPE is not required and the employee elects to wear his or her own PPE, the project or office manager shall ensure that the employee is properly trained in the fitting, donning, doffing, cleaning, and maintenance of his or her employee owned equipment.

F. Conduct and document employee training.

1. Train all employees who are required to wear PPE.
2. Require that training includes:
  - a. When PPE is to be worn.
  - b. That PPE necessary for the task to be completed.
  - c. How to properly don, doff, adjust and wear PPE.
  - d. Limitations of PPE.
  - e. Proper care, maintenance, useful life and disposal of PPE.
3. Training must be conducted before PPE is assigned.
4. Refresher training is needed when:
  - a. New types of PPE are assigned to the worker.
  - b. Worker cannot demonstrate competency in PPE use.
5. Keep written records of the employees trained and type of training provided, including the date of training.

G. Maintain Protective Equipment

1. Check PPE for damage, cracks, and wear prior to each use. Replace or repair equipment not found in good condition.
2. Wash off contaminated PPE with water and mild soap, as necessary, to prevent degradation of the equipment.

## **URS** Safety Management Standard **Personal Protective Equipment**

---

H. Periodically inspect worksites where employees are using PPE using Attachment 29-2.

1. Field activities – inspect work sites at least monthly.
2. Office/laboratory/shop locations – inspect work sites semi-annually.

### **5.0 Documentation Summary**

A. Records required in the Project Safety File:

1. Completed Hazard Assessment Certification Forms (Attachment 29-1)
2. Completed Personal Protective Equipment Inspection Sheet (Attachment 29-2)
3. Documentation of employee training.

B. Records required in the Office/Laboratory Safety Filing System:

1. Completed Hazard Assessment Certification Forms (Attachment 29-1)
2. Completed Personal Protective Equipment Inspection Sheet (Attachment 29-2)
3. Documentation of employee training.

### **6.0 Resources**

- A. U.S. OSHA Standards - Personal Protective Equipment -29 CFR 1910, Subpart I
- B. U.S. OSHA Construction Standard - Personal Protective Equipment –29 CFR 1926 Subpart E
- C. U.S. OSHA Technical Links - Personal Protective Equipment
- D. Australian Standards SAA HB9-1994 - Occupational Personal Protection
- E. American National Standards Institute, ANSI Z89.1-2003, Protective Headwear

## **URS** Safety Management Standard **Personal Protective Equipment**

---

- F. American National Standards Institute, ANSI Z87.1 - 1989, Eye and Face Protection
- G. American Society for Testing and Materials, ASTM F13-WK4519, Specification for Personal Protective Footwear
- H. SMS 40 - Fall Protection
- I. Queensland Workplace Health and Safety - Personal Protective Equipment
- J. Attachment 29-1 Hazard Assessment Form
- K. Attachment 29-2 PPE Inspection Form
- L. Attachment 29-3 – Eye and Face Protector Selection Guide



Health, Safety, and Environment  
**HAZARD ASSESSMENT  
CERTIFICATION FORM**

Attachment 29-1

Revision 1: Sept 2005

Location: \_\_\_\_\_ Job No.: \_\_\_\_\_

Date: \_\_\_\_\_ Assessment conducted by: \_\_\_\_\_

Specific tasks performed at this location: \_\_\_\_\_

Are any of the following hazards present during the task?		Yes	No	Eliminate hazard or use the following PPE
<b>Overhead Hazards</b>				
1.	Suspended loads that could fall			Hard hat, ANSI Z89, Class A, B or C
2.	Overhead beams or loads that could strike head			Hard hat, ANSI Z89, Class A, B or C
3.	Energized wires or equipment that could strike head			Hard hat, ANSI Z89, Class A or B (dependent on potential voltage)
4.	Employees working beneath an elevated site where objects could be dropped onto them			Hard hat, ANSI Z89, Class A, B or C
5.	Sharp objects or corners at head level			Hard hat, ANSI Z89, Class A, B or C
<b>Eye Hazards</b>				
6.	Chemical splashes or irritating mists			See Attachment 29-3
7.	Excessive dust			Safety glasses or goggles
8.	Smoke and/or fumes			Safety goggles
9.	Welding operations			See Attachment 29-3 and 29-4
10.	Lasers/optical radiation			Have URS HSE Representative assist you in proper selection
11.	Projectiles			Safety glasses or goggles plus face shield
12.	Sawing, cutting, chipping, and/or grinding			See Attachment 29-3
<b>Face Hazards</b>				
13.	Chemical splashes or irritating mists			See Attachment 29-3; add face shield if irritating or corrosive
14.	Welding operations			See Attachment 29-3 and 29-4
15.	Projectiles			Safety glasses or goggles plus face shield
<b>Hand Hazards</b>				
16.	Chemical exposure			Use chemical resistant gloves specific to hazard; consult MSDS, chemical hazard guide, or HSE Representative
17.	Sharp edges, splinters, etc.			Leather or Kevlar gloves
18.	Temperature extremes – heat			Leather gloves, Kevlar gloves, welder's gloves, hot mill gloves



Health, Safety, and Environment  
**HAZARD ASSESSMENT  
CERTIFICATION FORM**

Attachment 29-1

Revision 1: Sept 2005

Are any of the following hazards present during the task?		Yes	No	Eliminate hazard or use the following PPE
19.	Temperature extremes – cold			Insulated gloves
20.	Blood, fungus, biological agents			Nitrile gloves
21.	Exposure to live electrical currents			Electrical gloves; consult HSE representative
22.	Sharp tools, machine parts, etc.			Leather or Kevlar gloves
23.	Material handling			Leather gloves
<b>Foot Hazards</b>				
24.	Heavy materials (greater than 50 pounds) handled by employees			Safety shoes or boots
25.	Potential to crush whole foot			Safety shoes or boots with metatarsal guard
26.	Sharp edges or points (puncture risk)			Safety shoes or boots
27.	Exposure to electrical wires			Safety shoes or boots with electrically conductive soles
28.	Slippery conditions			Rubber soled boots or grips
29.	Chemical contamination			Rubber, nitrile boots or boot covers
30.	Wet conditions			Rubber boots or boot covers
31.	Construction/demolition			Safety shoes or boots with metatarsal guard if foot crushing hazard exists
<b>Fall Hazards</b>				
32.	Elevations above 4 feet (general industry) or 6 feet (construction) without guardrails			ANSI A-10.14 Type 1 full body harness
33.	Suspended scaffolds, boatswain's chairs, float scaffolds, or suspended staging			ANSI A-10.14 Type 1 full body harness
34.	Working in trees			ANSI A-10.14 Type 1 full body harness
35.	Working in vehicle-mounted elevating work platforms (e.g., bucket trucks, aerial lifts)			ANSI A-10.14 Type 1 full body harness
<b>Water Hazards</b>				
36.	Working on or above water where a risk of drowning exist			US Coast Guard approved personal floatation device; Type I, II, or III
<b>Excessive Heat or Flame</b>				
37.	Full body chemical protective clothing in temperatures greater than 80 F			Cooling vest
38.	Work around molten metal or flame			Nomex or Kevlar clothing
39.	Welding activities			Welding leathers for those areas that are exposed to flame, spark, or molten metal



Health, Safety, and Environment  
**HAZARD ASSESSMENT  
CERTIFICATION FORM**

Attachment 29-1  
Revision 1: Sept 2005

Are any of the following hazards present during the task?		Yes	No	Eliminate hazard or use the following PPE
<b>Respiratory Hazards</b>				
40.	Refer to SMS 042 for respirator selection guidance			
<b>Excessive Noise</b>				
41.	Exposure to noise			Ear plugs or muffs
<b>Body and Leg Protection</b>				
42.	Chemical exposure			Contact URS HSE Representative for assistance in proper selection
43.	Using chainsaw, cutting brush			Chainsaw chaps

*I certify that the above inspection was performed to the best of my knowledge and ability, based on the hazards present on* \_\_\_\_\_

\_\_\_\_\_  
Signature



Health, Safety, and Environment  
**PERSONAL PROTECTIVE EQUIPMENT  
INSPECTION SHEET**

Attachment 29-2

Revision 1: Sept 2005

Name of Inspector \_\_\_\_\_ Date Inspected \_\_\_\_\_

	True	False (= Hazard - Needs to be fixed)
<b>Hard Hats</b>		
1. The brim or shell does not show signs of exposure and excessive wear, loss of surface gloss, chalking or flaking.		
2. Suspension system in hard hat does not show signs of deterioration including cracking, tearing or fraying.		
3. The brim or shell is not cracked, perforated or deformed.		
4. Employees use hard hats in marked areas.		
5. Areas requiring hard hat usage are marked.		
<b>Safety Shoes</b>		
6. Safety shoes used by employees do not show signs of excessive wear.		
7. Areas requiring safety shoes are marked.		
<b>Work Gloves</b>		
8. Gloves are worn when needed.		
9. Gloves do not show signs of excessive wear such as cracks, scrapes, or lacerations, thinning or discoloration or break through to the skin.		
<b>Protective Clothing</b>		
10. Protective clothing is worn by employees when required.		
<b>Hearing Protection</b>		
11. Noise hazard areas are posted.		
12. Employees are using earplugs or muffs when using noise producing equipment or working in posted noise hazard areas.		
<b>Safety Glasses</b>		
13. Eye hazard areas are marked or posted.		
14. Employees use safety glasses when working in eye hazard areas or working with equipment which produces an eye hazard.		

**REMARKS**

---

---

---

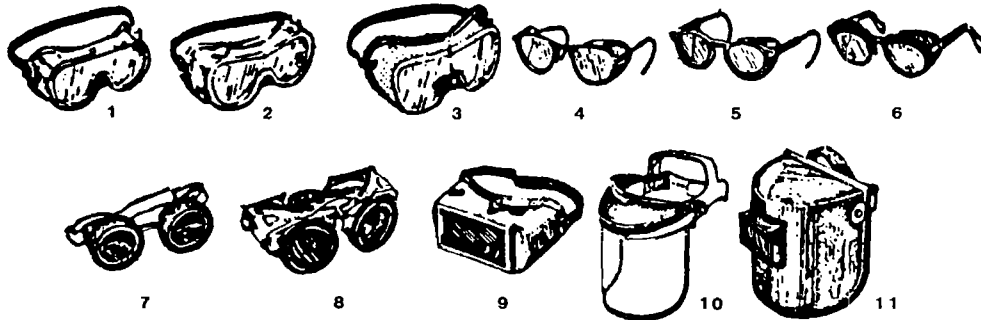
---

---

# URS Corporation

## URS Corporation Health & Safety Program

### EYE AND FACE PROTECTOR SELECTION GUIDE



- |   |  |
|---|--|
| <p>1. <b>GOGGLES</b>, Flexible Fitting, Regular Ventilation</p> <p>2. <b>GOGGLES</b>, Flexible Fitting, Hooded Ventilation</p> <p>3. <b>GOGGLES</b>, Cushioned Fitting, Rigid Body</p> <p>*4. <b>SPECTACLES</b>, Metal Frame, with Sideshields</p> <p>*5. <b>SPECTACLES</b>, Plastic Frame, with Sideshields</p> <p>*6. <b>SPECTACLES</b>, Metal-Plastic Frame, with Sideshields</p> <p>*7. <b>WELDING GOGGLES</b>, Eyecup Type, Tinted Lenses (Illustrated)</p> <p>7A. <b>CHIPPING GOGGLES</b>, Eyecup Type, Clear Safety Lenses (Not Illustrated)</p> | <p>*8. <b>WELDING GOGGLES</b>, Coverspec Type, Tinted Lenses (Illustrated)</p> <p>8A. <b>CHIPPING GOGGLES</b>, Coverspec Type, Clear Safety Lenses (Not Illustrated)</p> <p>*9. <b>WELDING GOGGLES</b>, Coverspec Type, Tinted plate Lens</p> <p>10. <b>FACE SHIELD</b>, (Available with Plastic or Mesh Window)</p> <p>11. <b>WELDING HELMETS</b></p> |
|---|--|

APPLICATIONS		
OPERATION	HAZARDS	RECOMMENDED PROTECTORS <small>Bold Type Numbers Slightly Preferred Protection</small>
ACETYLENE-BURNING ACETYLENE-CUTTING ACETYLENE-WELDING	SPARKS, HARMFUL RAYS MOLTEN METAL, FLYING PARTICLES	<b>7,8,9</b>
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	<b>2,10</b> (For severe exposure add 10 over 2)
CHIPPING	FLYING PARTICLES	<b>1,3,4,5,6,7A,8A</b>
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	<b>9,11</b> (11 in combination with 4,5,6 in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	<b>7,8,9</b> (For severe exposure add 10)
GRINDING-LIGHT	FLYING PARTICLES	<b>1,3,4,5,6,10</b>
GRINDING-HEAVY	FLYING PARTICLES	<b>1,3,7A,8A</b> (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	<b>2</b> (10 when in combination with 4,5,6)
MACHINING	FLYING PARTICLES	<b>1,3,4,5,6,10</b>
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	<b>7,8</b> (10 in combination with 4,5,6 in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	<b>1,3,4,5,6,10</b>

\* Non-side shield spectacles are available for limited hazard use requiring only frontal protection.

# **URS SAFETY MANAGEMENT STANDARD**

## **Work Zone Traffic Control**

---

### **1. Applicability**

This procedure applies to URS field operations involving work performed on roads, highways, and similar areas where motor vehicles may be a hazard.

### **2. Purpose and Scope**

This procedure is intended to protect personnel from the hazards associated with work performed on or next to highways and roads.

### **3. Implementation**

Field Activities - Implementation of this program is the responsibility of the Project Manager.

### **4. Requirements**

- A. Review the project in the planning phase to determine if any work will be performed on or adjacent to any road that will disrupt normal traffic flow.
- B. Hire a qualified contractor or have an in house Competent Person devise a traffic control plan based on the work to be performed.
  - 1. Competent persons are those who are knowledgeable about the fundamental principles of temporary traffic control and the work activities to be performed.
  - 2. Traffic control plans will be designed to meet requirements as set in the Manual on Uniform Traffic Control Devices (MUTCD) as well as those rules set by state, county and cities in which work is performed.
  - 3. Require that the plan is commensurate with the complexity of the project.
- C. Submit the traffic control plan to the road authority for approval.
  - 1. Submissions will be made to the state department of transportation or highways if state or federal highways are impacted as well.
  - 2. Local county representatives.
  - 3. Local city representatives, if within city limits.

## **URS SAFETY MANAGEMENT STANDARD**

### **Work Zone Traffic Control**

---

4. For U.K. operations, submittal is to be made to County Council or local authority.
- D. *Decide whether to have qualified in house personnel or contract personnel implement the traffic control plan in the field.*
  1. Certified flaggers may set up work zones.  
  
*Flaggers must attend an eight-hour work zone traffic control course as taught by an ATSSA certified instructor (or equivalent).*
  2. Obtain appropriate traffic control equipment as described in the MUTCD.
  3. For U.K. operations, all operative must be trained in accordance with 'New Road and Street Works' Act.
- E. Execute the traffic control plan developed for the job site. Require all personnel who work on/or adjacent to the roadway to wear bright orange, strong yellow-green or fluorescent versions of these colors of approved work zone clothing, including:
  1. Vests, at a minimum.
  2. Coveralls, if desired.
  3. Rainwear or other apparel as needed.
- F. Require a Competent Person who is certified as a Worksite Traffic Supervisor supervises flaggers at least once a day.
- G. Develop a plan for the periodic inspection and maintenance of the Traffic Control Zone utilizing Attachment 32-1.

#### **5. Documentation Summary**

Records required in the Project Safety File:

- A. Copies of traffic control plans used on site.
- B. Training certificates for URS flaggers and Competent Persons.
- C. Qualifications of contracted flaggers and Competent Persons.
- D. Inspection records.

## **URS** SAFETY MANAGEMENT STANDARD **Work Zone Traffic Control**

---

### **6. Resources**

- A. Part VI of the Manual on Uniform Traffic Control Devices (MUTCD)
- B. American Traffic Safety Services Association
- C. ATTSA Flagger Train the Trainer Program
- D. U.K. - 'New Road and Street Works' Act
- E. Australian Standards HB81.1-2003 - Field Guide for Traffic Controls at Work on Roads
- F. Australian Standards AS1742.3-2002 - Manual of Uniform Traffic Control Devices
- G. Australian Standards HB69.13-1995. Guide to Traffic Engineering Practice - Pedestrian
- I. Attachment 32-1 - Traffic Control Inspection Checklist

## **URS SAFETY MANAGEMENT STANDARD**

### **CORROSIVE AND REACTIVE MATERIALS**

---

#### **1. Applicability**

This program applies to URS office and field operations where corrosive or reactive materials are stored or used.

#### **2. Purpose and Scope**

This program provides information regarding the proper methods to store, handle and work with corrosive and reactive materials. This procedure considers a corrosive material as one that has a pH less than 2.0 (acid), or greater than 12.5 (base). A reactive material is a chemical that may be sensitive to shock, or may react with air or water depending upon its makeup.

#### **3. Implementation**

Office Locations -Implementation of this program is the responsibility of the Office Manager.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

#### **4. Requirements**

A. Appoint a responsible person who will:

1. Inspect storage areas periodically.
2. Monitor the quantity of corrosive and reactive materials on site as well as those incoming materials.
3. Review work practices utilizing corrosive and reactive materials.

B. Require that all employees working with corrosive or reactive materials, or who are working in close proximity to where such materials are being used or handled, are trained in accordance with SMS 002, "Worker Right to Know".

C. Control the use of corrosive and reactive materials by URS personnel.

1. Order only those materials and quantities that are needed to complete a job.
2. Check incoming corrosive and reactive materials for proper labeling.

## **URS SAFETY MANAGEMENT STANDARD**

### **CORROSIVE AND REACTIVE MATERIALS**

---

- a. Label materials if needed upon arrival on site.
  - b. Mark reactive materials containers with the date of receipt of the chemical.
3. Check incoming corrosive and reactive materials for material safety data sheets (MSDS). If MSDS are not already on file, order them from the manufacturer, distributor or vendor.
  4. Add incoming corrosive and reactive chemicals to the hazardous materials inventory, if not already on the inventory, following procedures set forth in SMS 002, "Worker Right to Know".
  5. Do not store any quantity of corrosive or reactive materials except consumer products in an office. These materials are to be stored off-site or at an on-site laboratory or storage area.
- D. Store corrosive and reactive materials appropriately.
1. Store corrosives and reactive materials as indicated on the MSDS. In general, store these materials:
    - a. In a cool, dry environment, free from extremes of temperature and humidity.
    - b. In a manner that separates them from other materials (including flammables and oxidizers) and from each other.
      1. Separate acids and bases.
      2. Separate reactive materials from acids and bases, and protect from contact with water.
    - c. On materials that are acid resistant (Teflon-coated, plastic, etc.) for small containers.
    - d. Covered, not stacked on one another on acid resistant material for carboys (approximately 5 gallons/22 liters).
    - e. On individual racks or securely blocked on skids with closure (plug) facing upward to prevent leakage for drums.
- E. Require that labeling and signage are in place.

## **URS SAFETY MANAGEMENT STANDARD**

### **CORROSIVE AND REACTIVE MATERIALS**

---

Label containers with the appropriate warning word to indicate the hazard: DANGER; WARNING; CAUTION; CORROSIVE; OXIDIZER.

F. Use corrosive and reactive materials appropriately.

1. Safe-handling procedures will vary with each operation and type and concentration of the chemical, in all cases review the MSDS and product information before use.
2. Use SMS 029, "Personal Protective Equipment," when working with or around corrosive and reactive materials.
  - a. Review the MSDS for the chemical used to determine the type of PPE needed.
  - b. Wear the following PPE as a minimum when working with corrosives and reactive materials:
    1. Chemical splash goggles.
    2. Chemical resistant gloves.
    3. Chemical resistant apron.
3. Obtain medical care immediately in the event of:
  - a. Skin or eye exposure (e.g., splash) to corrosive liquids.
  - b. Inhalation of vapors of corrosive liquids that cause respiratory discomfort.
4. Require an eyewash to be located in all areas where acids or bases are used. Safety showers should be nearby if significant acid or base quantities are involved.
  - a. Place emergency eyewashes and showers in accessible locations that require no more than 10 seconds to reach and are in a travel distance no greater than 25 feet (7.5 meters) from the hazard.
  - b. Mark emergency eyewashes and showers with a highly visible sign.
  - c. Require the area around emergency eyewashes and showers to be well lighted and visible.

## **URS SAFETY MANAGEMENT STANDARD**

### **CORROSIVE AND REACTIVE MATERIALS**

---

- d. Require emergency showers to deliver a minimum 20 gallons (85 liters) per minute for 15 minutes.
- e. Require emergency eyewashes to be capable of delivering to the eyes not less than 1.5 liters per minute for 15 minutes.

#### **G. Be prepared to clean up spills of corrosive and reactive materials.**

- 1. Have a written spill response plan in place before materials are stored on site.
- 2. Have commercial spill kits available for clean up of small quantities of materials.
- 3. Clean up or respond to spills promptly.
- 4. Do not use combustible organic materials (sawdust, excelsior, wood chips and shavings, paper, rags or burlap bags) to absorb or clean up spills.

#### **H. Dispose of corrosive and reactive materials appropriately.**

- 1. Segregate organic acids, inorganic acids, and basic wastes.
- 2. Contract hazardous waste disposal services should be obtained to dispose of waste materials. All waste must be appropriately packaged for off-site transportation.

#### **I. Inspect corrosive and reactive storage and use areas periodically.**

- 1. Inspect office settings quarterly.
- 2. Inspect field related project sites monthly.
- 3. Use the inspection sheet provided as Attachment 9-1 to inspect sites.

## **5. Documentation Summary**

#### **A. File these records in the Office Safety Filing System:**

- 1. Completed Corrosive and Reactive Material Inspection Sheets.
- 2. Worker Right to Know training documentation.

## **URS** SAFETY MANAGEMENT STANDARD **CORROSIVE AND REACTIVE MATERIALS**

---

3. Written Spill Response Plan.

B. For field operations, file these records in the Project Safety File.

1. Completed Corrosive and Reactive Material Inspection Sheets.

2. Worker Right to Know training documentation.

3. Written Spill Response Plan.

### **6. Resources**

A. ANSI Z358.1-1990 American National Standard for Emergency Eyewash and Shower Equipment

B. U.S. OSHA Technical Links - Personal Protective Equipment

C. U.S. OSHA Technical Links - Hazard Communication

D. Australian Standards AS 3780 - 1994. The Storage and Handling of Corrosive Substances

E. Attachment 9-1 - Inspection Sheet

# **URS** SAFETY MANAGEMENT STANDARD

## **Excavation Safety**

---

### **1. Applicability**

This procedure applies to projects where URS controls trenching and excavation activities and/or where URS employees are exposed to hazards associated with trenching and excavation activities.

### **2. Purpose and Scope**

This procedure is intended to protect personnel from the hazards associated with excavation entry activities.

### **3. Implementation**

Field Operations - Implementation of this program is the responsibility of the Project Manager and field staff.

An approach that does not require employees or subcontractors to enter an excavation is always preferred. If employees or subcontractors must enter an excavation, compliance with this SMS or similar client/contractor procedures is required.

### **4. Requirements**

#### **A. Competent Person**

Appoint an Excavation Competent Person when URS controls excavation activities. The Excavation Competent Person:

1. Is responsible for conducting daily inspections of excavations, adjacent areas, and protective systems prior to each shift.
2. Is responsible for inspection after every rainstorm or other hazard.
3. Must have knowledge of soils and soil classification.
4. Understands design and use of protective systems.
5. Has authority to stop work and take corrective actions when conditions change.
6. Has the ability to recognize and test hazardous atmospheres.

## **URS SAFETY MANAGEMENT STANDARD**

### **Excavation Safety**

---

7. Has formal documentation of training as an Excavation Competent Person.
8. Is physically located at the excavation while work is in progress.

#### **B. Access/Egress**

Trench excavations will have ramps or ladders within 25 feet (8 meters) of the entrants.

#### **C. Soil Classification**

Soil classifications must be conducted in accordance with Attachment 13-1, if a sloping or benching system is issued. For the purposes of this standard all soils will be classified by a person meeting the qualifications of a competent person as described in 29 CFR 1929 Subpart P. The competent person shall consult with a Registered Professional Engineer in the event the soil classification requires additional technical expertise.

#### **D. Protective Systems**

Protect employees in excavations deeper than 4 feet (1.2 meters) by means of properly designed protective systems. All protective systems must comply with 29 CFR 1926 Subpart P Appendices B, C, D, and E.

##### **1. Sloping and Benching**

See Attachment 13-2.

##### **2. Timber Shoring for Trenches**

Timber shoring for trenches must be designed and stamped by a Registered Professional Engineer in accordance with 29CFR Subpart P, Appendix C.

##### **3. Aluminum Hydraulic Shoring for Trenches**

Aluminum hydraulic shoring for trenches must be approved by a Registered Professional Engineer in accordance with 29CFR 1926 Subpart P, Appendix D.

##### **4. Alternatives to Timber Shoring**

Trench shields and boxes must be either be pre-manufactured with listed load ratings or designed, stamped and constructed under the

## **URS** SAFETY MANAGEMENT STANDARD **Excavation Safety**

---

direction of a Registered Professional Engineer. See 29 CFR 1926 Subpart C, Appendix E for examples.

5. Protective systems designed to protect employees in excavations deeper than 20 feet (6.1 meters) must be designed and stamped by a Registered Professional Engineer.
6. Excavations will be clearly identified and barricaded to keep unauthorized individuals out.

### E. Permit Authorization and Inspections

1. Use the Excavation Authorization Form ( Attachment 13-3 ) of this procedure that requires the following issues to be addressed:
  - a. Employee training/briefings.
  - b. Electrical safety.
  - c. Surface encumbrances.
  - d. Underground installations and utilities.
  - e. Protective systems.
  - f. Access and egress.
  - g. Exposure to vehicular traffic.
  - h. Exposure to falling loads.
  - i. Warning systems for mobile equipment.
  - j. Testing for hazardous atmospheres.
  - k. Emergency rescue equipment.
  - l. Protection from hazards associated with water accumulation.
  - m. Stability of adjacent structures.
  - n. Protection of employees from loose rock.
  - o. Inspections.

## **URS** SAFETY MANAGEMENT STANDARD **Excavation Safety**

---

p. Fall protection.

2. Require daily inspections of excavations to be conducted by Competent Person using Attachment 13-4.

### **F. Excavating at Potential MEX/UXO Sites**

If the project site is suspected of munitions and explosives of concern (MEC) or unexploded ordinance (UXO) contamination, the UXO team will conduct a reconnaissance and MEC/UXO avoidance to provide clear access routes to each site prior to excavation crews entering the area.

MEC/UXO sites with planned excavation activities will not be conducted until a complete plan for the site is prepared and/or approved by URS UXO Safety Officer. MEC/UXO avoidance must be conducted during excavation operations on known or suspect MEC/UXO sites (SMS 039)

### **G. Training/Briefings**

Conduct daily safety briefings for all employees associated with excavation activities and document on Attachment 13-3. Discuss excavation hazards, protective measures, and work practices that will be applicable to the day's activities.

## **5. Documentation Summary**

Records required for the Project Safety File:

- A. Competent person qualifications.
- B. Excavation Authorization Form.
- C. Daily Competent Person inspections.
- D. Daily worker briefing documentation.
- E. Daily inspection records.

## **6. Resources**

- A. U.S. OSHA Standard - Excavations - 29 CFR 1926, Subpart P
  1. Appendix B, Sloping and Benching
  2. Appendix C, Timber Shoring

## **URS** SAFETY MANAGEMENT STANDARD **Excavation Safety**

---

- 3. Appendix D, Aluminum Hydraulic Shoring
- 4. Appendix E, Alternatives to Timber Shoring
- B. U.S. OSHA Technical Links - Trenching and Excavation
- C. US Army Corp of Engineers projects, the requirements of EM 385-1-1,  
Section 25 (PDF file)
- D. Queensland Workplace Health and Safety – Workplace Health and Safety  
Regulation Part 17 (Excavations)
- E. Attachment 13-1 - Soils Classification
- F. Attachment 13-2 - Simple Slopes
- G. Attachment 13-3 - Excavation Authorization Form
- H. Attachment 13-4 - Daily Excavation/Trench Inspection Form

# **URS SAFETY MANAGEMENT STANDARD**

## **Respiratory Protection**

---

### **1. Applicability**

This program defines responsibilities and procedures and is applicable to URS operations that may require the use of respiratory protection including Immediately Dangerous to Life and Health (IDLH) and emergency conditions. This program also addresses the voluntary use of respirators.

### **2. Purpose and Scope**

The purpose of this procedure is to protect those employees performing operations for which exposures can not be controlled by use of conventional engineering or administrative controls and prior to establishing a negative air exposure assessment, and to require that respiratory protective equipment is selected, used, maintained, and stored in accordance with acceptable practices.

### **3. Implementation**

Laboratory/Office/Shop Locations -	Implementation of this program is the responsibility of the Office Manager.
Field Activities -	Implementation of this program is the responsibility of the Project Manager.
Program Administration-	URS Health and Safety Director is responsible for the development and annual review of this program.

URS Health and Safety Program Representatives are responsible to:

Assist responsible employees in the implementation of the program.

Assessing local compliance with the program.

### **4. Requirements**

- A. Determine if respirators are needed or going to be used for hazardous jobs before assigning that job to an employee.
  1. If the determination is that a potential for respiratory hazards exists with any portion of that job activity then, complete Attachment 42-1.
  2. Contact a URS Health and Safety Program Representative if any of the questions in Attachment 42-1 are checked "yes."

## **URS** SAFETY MANAGEMENT STANDARD

### **Respiratory Protection**

---

3. Follow instructions in Attachment 42-2 for employees who wish to voluntarily use dust masks.
  4. Follow all the requirements of this procedure for employees who wish to voluntarily use tight-fitting (e.g., air purifying) respirators.
  5. Required respirators will be paid for by URS and will be provided without cost to the employee.
- B. Select the proper respirator for the job.
1. For those jobs identified in Attachment 42-1, contact a URS Health and Safety Program Representative for assistance in respirator selection.
  2. Contact a URS Health and Safety Program Representative for follow up if there are any problems implementing the recommendations made.
- C. Require employees who will use respirators to be medically qualified before fit testing and assigning them a respirator.
1. For program details, refer to SMS 24, Medical Screening and Surveillance.
  2. Require that employees have a current and accurate Medical Surveillance form (Attachment 24-2)
  3. Obtain a copy of the employee's Health Status Medical Report from the Health and Safety Representative. The consulting occupational physician of the medical service provider following each work related examination issues the Health Status Medical Report. Employees cannot be assigned respirators unless they are medically cleared for respirator use.
- D. Require respirator users to receive appropriate training.
1. All respirator users must be trained:
    - a. Before they are assigned a respirator.
    - b. Annually thereafter.
    - c. Whenever a new hazard or job is introduced.

## **URS** SAFETY MANAGEMENT STANDARD

### **Respiratory Protection**

---

- d. Whenever employees fail to demonstrate proper use or knowledge.
- 2. Training must address, at a minimum, the following:
  - a. Why the respirator is necessary, and what conditions can make the respirator ineffective.
  - b. What the limitations and capabilities of the respirators are.
  - c. How to use respirators effectively in emergency situations.
  - d. How to inspect, put on and remove, and check the seals of the respirator.
  - e. What the respirator maintenance and storage procedures are.
  - f. How to recognize medical signs and symptoms that may limit or prevent effective use of the respirator.
- E. Require respirator users to be fit tested.
  - 1. Any employee who has been assigned a reusable respirator must be fit tested on an annual basis (no more than one year may elapse between fit tests), or when the employee is assigned a respirator of a different make, type or size from that previously tested.
  - 2. Fit testing can be performed by contract or in house personnel.
  - 3. Obtain a signed written copy of the fit test results. The fit test results should include:
    - a. Employee's name and social security number.
    - b. Respirator brand, model and size fitted for.
    - c. Date fit tested.
    - d. Method of fit testing used.
    - e. Name and signature of fit tester.
    - f. Statement that fit test protocol met the requirements of 29 CFR 1910.134.

## **URS** SAFETY MANAGEMENT STANDARD

### **Respiratory Protection**

---

g. Manufacturer and serial number of fit testing apparatus.

A fit test results form is available at Attachment 42-5.

F. Provide qualified employees with respirator(s) and adequate amounts of parts and cartridges.

1. Assign employees whose duties require respirators their own respirator for which they have been fit tested.
2. Provide special eyeglass inserts designed for the respirator if an employee must wear eyeglasses with a full facepiece respirator. Contact lenses may be worn when wearing a full facepiece respirator.

G. Require respirators to be used properly.

1. Prohibit facial hair where the respirator-sealing surface meets the wearer's face.
2. Require employees to perform a positive and negative fit check every time the respirator is put on.
3. Employees will leave the area where respirators are being used:
  - a. Before removing the facepiece for any reason.
  - b. To change cartridges.
  - c. If any of the following is detected:
    1. Vapor or gas breakthrough.
    2. Leakage around the facepiece.
    3. Changes in breathing resistance.
4. Use cartridges with End of Service Life Indicators or determine the respirator cartridge changeout schedule. See Attachment 42-4 for Guidance.

H. Require respirators to be cleaned and stored properly.

1. Clean and disinfect respirators after each use.

## **URS SAFETY MANAGEMENT STANDARD**

### **Respiratory Protection**

---

2. Store respirators in a plastic bag or case and in a clean location.
  3. Inspect respirators before use and after each cleaning.
- I. Address issues associated with special use respirators self-contained breathing apparatus; air supply respirators; emergency use respirators).
1. Self Contained Breathing Apparatus  
  
Inspect self-contained breathing apparatus and other emergency use respirators monthly and after each use in accordance with manufacturer's instructions.
  2. Air Supplied Respirators
    - a. Air used for atmosphere-supplying respirators must meet or exceed the requirements for Type 1 - Grade D breathing air. Never use oxygen.
      1. A certificate of analysis must accompany bottled air.
      2. Compressors used to supply breathing air must:
        - i. Prevent entry of contaminated air into the air supply.
        - ii. Minimize moisture content.
        - iii. Have suitable in-line sorbent beds and filter to provide appropriate air quality.
        - iv. Have a high carbon monoxide alarm that sounds at 10 ppm.
    - b. Couplings on air hose lines must be incompatible with other gas systems.
- J. Require follow up training and medical surveillance to be provided as directed.
1. Provide follow-up physical examinations as directed by the SMS 24-3, Medical Screening and Surveillance Exam Protocol table.
  2. Provide follow-up physicals as directed by the Regional Medical Surveillance Administrator.

## **URS SAFETY MANAGEMENT STANDARD**

### **Respiratory Protection**

---

3. Provide annual refresher training.
4. Provide annual fit testing.

#### **5. Documentation Summary**

##### **A. Laboratory**

1. File these records in the Laboratory Safety Filing System
  - a. Completed forms:
    1. "Identifying When A Respirator Is Needed" - Attachment 42-1; and,
    2. "Respirator Standard Operating Procedure" - Attachment 42-3.;
  - b. Employee Health Status Medical Report includes clearance for respirator use.
  - c. Employee Fit Test Records; and,
  - d. Employee Respirator Training Records.
2. Send a copy of the following records to the Regional Health and Safety Manager:
  - a. Completed "Voluntary Use of Respirators" form - Attachment 42-2.
  - b. Employee Fit Test Records.
  - c. Employee Respirator Training Records.

##### **B. Field**

1. File these records in the Project Health and Safety File:
  - a. Completed forms:
    1. "Identifying When A Respirator Is Needed" - Attachment 42-1; and,

## **URS** SAFETY MANAGEMENT STANDARD

### **Respiratory Protection**

---

2. "Respirator Standard Operating Procedure" - Attachment 42-3.
  3. Employee Health Status Medical Report includes *clearance for respirator use.*;
  4. Employee Fit Test Records; and,
  5. Employee Respirator Training Records.
2. Send a copy of the following records to the Regional Health and Safety Manager:
- a. Completed "Voluntary Use of Respirators" form - Attachment 42-2;.
  - b. Employee Fit Test Records; and,
  - c. Employee Respirator Training Records.

#### **6. Resources**

- A. U.S. OSHA Standard - Respiratory Protection - 29 CFR 1910.134
  - B. U.S OSHA Technical Links - Respiratory Protection
  - C. ANSI Z88.6, Respirator Use – Physical Qualifications for Personnel, Current Revision
  - D. ANSI Z88.2, Respiratory Protection, Current Revision
  - E. 3M Cartridge Service Life Interactive Program
  - F. Australian Standards AS/N25 1715 - 1994. Selection, Use, and Maintenance of Respiratory Protection Devices
  - G. Australian Standards HB9-1994. Occupational Personal Protection
  - H. AIHA, The Occupational Environment - Its Evaluation and Control
- The following documents are PDF files which must be read with Adobe Reader:
- I. NIOSH Respirator Decision Logic

## **URS** SAFETY MANAGEMENT STANDARD **Respiratory Protection**

---

- J. NIOSH Guide to Industrial Respiratory Protection
- K. Attachment 42-1 - Identifying When a Respirator is Needed
- L. Attachment 42-2 - Voluntary Use of Respirators
- M. Attachment 42-3 - Respirator Standard Operating Procedure
- N. Attachment 42-4 - Respiratory Cartridge Change Schedule
- O. Attachment 42-5 - Fit Test Results Form
- P. Medical Screening and Surveillance Program - SMS 24

## **URS SAFETY MANAGEMENT STANDARD**

### **Drilling Safety Guidelines**

---

#### **1. Applicability**

This program applies to URS projects in which truck-mounted, or other engine powered, drill rigs are used. For drill rigs operated by contractors, the primary responsibility for drilling safety is with the drilling contractor.

#### **2. Purpose and Scope**

The purpose of these guidelines is to provide an overview for working safely around drilling operations with truck-mounted and other engine-powered drill rigs. The procedure addresses off-road movement of drill rigs, overhead and buried utilities, use of augers, rotary and core drilling, and other drilling operations and activities.

#### **3. Implementation**

**Field Activities** *Drill rig safety and maintenance is the responsibility of the drill rig operator. URS employees are responsible for their own safety including recognizing and avoiding drill rig hazards. URS employees that observe a drill rig condition believed to be unsafe shall advise the drill rig operator of the unsafe condition.*

*If the drilling firm is a subcontractor to URS, work will be stopped if conditions are determined to be unsafe.*

#### **4. Safety Guidelines**

##### **A. General Guidelines**

URS technicians, geologists, engineers, or other field staff assigned to observe drilling operations or collect soil samples should observe the following guidelines:

*Require a meeting at project start-up regarding the drill rig operator responsibility for rig safety and any site and equipment specific safety requirements*

*Set up any sample tables and general work areas for the URS field staff to the side of the drill rig (preferably 10 meters away) and not directly behind the rig.*

*URS engineers, technician, and geologists shall not assist the drillers with the drilling equipment or supplies and shall not at any time operate the drill rig controls.*

## **URS SAFETY MANAGEMENT STANDARD**

### **Drilling Safety Guidelines**

---

#### **B. Movement of Drill Rigs**

Before moving a rig, the operator must do the following:

To the extent practical, walk the planned route of travel and inspect it for depressions, gullies, ruts, and other obstacles.

Check the brakes of the truck/carrier, especially if the terrain along the route of travel is rough or sloped.

Discharge all passengers before moving on rough or steep terrain.

Engage the front axle (on 4x4, 6x6, etc. vehicles) before traversing rough or steep terrain.

Driving drill rigs along the sides of hills or embankments should be avoided; however, if side-hill travel becomes necessary, the operator must conservatively evaluate the ability of the rig to remain upright while on the hill or embankment. The possibility must be considered that the presence of drilling tools on the rig may reduce the ability of the rig to remain upright (raises the center of mass of the rig).

Logs, ditches, road curbs, and other long and horizontal obstacles should be normally approached and driven over squarely, not at an angle.

When close lateral or overhead clearance is encountered, the driver of the rig should be guided by another person on the ground.

Loads on the drill rig and truck must be properly stored while the truck is moving, and the mast must be in the fully lowered position.

After the rig has been positioned to begin drilling, all brakes and/or locks must be set before drilling begins. If the rig is positioned on a steep grade and leveling of the ground is impossible or impractical, the wheel of the transport vehicle should be blocked and other means of preventing the rig from moving or topping over employed.

#### **C. Buried and Overhead Utilities**

The location of overhead and buried utility lines must be determined before drilling begins, and the locations should be noted on boring plans and/or assignment sheets.

When overhead power lines are close by, the drill rig mast should not be raised unless the distance between the rig and the nearest power line is at least 20 feet (7 meters) or other distance as required by local ordinances, whichever is greater. The drill rig operator or assistant should walk completely around the rig to make sure that proper distance exists.

## **URS SAFETY MANAGEMENT STANDARD**

### **Drilling Safety Guidelines**

---

When the drill rig is positioned near an overhead line, the rig operator should be aware that hoist lines and power lines can be moved towards each other by wind. When necessary and approved by the Project Manager (PM), the utility and/or power lines may be shielded, shut down, or moved by the appropriate personnel.

For additional information, please refer to SMS 34 "Utility Clearances and Isolation".

#### **D. Clearing the Work Area**

Before a drill rig is positioned to drill, the area on which the rig is to be positioned should be cleared of removable obstacles and the rig should be leveled if sloped. The cleared/leveled area should be large enough to accommodate the rig and supplies.

#### **E. Safe Use of Augers**

Never place hands or fingers under the bottom of an auger flight or drill rods when hoisting the augers or rods over the top of another auger or rod in the ground or other hard surfaces, such as the drill rig platform.

Never allow feet to get under the auger or drill rod while they are being hoisted.

When the drill is rotating, stay clear of the drill string and other rotating components of the drill rig. Never reach behind or around a rotating auger for any reason.

Move auger cuttings away from the auger with a long-handled shovel or spade; never use hands or feet.

Never clean an auger attached to the drill rig unless the transmission is in neutral or the engine is off, and the auger has stopped rotating.

Do not wear loose clothing or jewelry while working near the drill rig. Long hair must be pulled back to avoid entanglement with moving parts.

Hearing protection is required when working near an operating drill rig.

#### **F. Safe Use of Hand Tools**

Regulations regarding hand tools should be observed in addition to the guidelines provided below:

Each tool should be used only to perform tasks for which it was originally designed.

Damaged tools should be repaired before use or discarded.

## **URS SAFETY MANAGEMENT STANDARD**

### **Drilling Safety Guidelines**

---

Safety goggles or glasses should be worn when using a hammer or chisel. Nearby co-workers and by-standers should be required to wear safety goggles or glasses also, or move away.

Tools should be kept cleaned and stored in an orderly manner when not in use.

#### **G. Safe use of Wire Line Hoists, Wire Rope, and Hoisting Hardware**

Safety rules described in Title 29 Code of Federal Regulations (CFR) 1926.552 and guidelines contained in the Wire Rope User's Manual published by the American Iron and Steel Institute shall be used whenever wire line hoists, wire rope, or hoisting hardware are used. The driller should provide written reports (upon request) documenting inspections of equipment.

#### **H. Traffic Safety**

Drilling in streets, parking lots or other areas of vehicular traffic requires definition of the work zones with cones, warning tape, etc. and compliance with local police requirements. Refer to SMS 32 "Work Zone Traffic Control".

#### **I. Fire Safety**

Fire extinguishers (type ABC) shall be kept on or near drill rigs for fighting small fires.

If methane or other flammable gases or vapors are suspected in the area, a combustible gas indicator (CGI) shall be used to monitor the air near the borehole with all work to stop at 20 percent of the Lower Explosive Limit (LEL).

Work shall stop during lightning storms.

#### **J. Drilling at Potential MEC/UXO Sites**

If the project site is suspected of munitions and explosives of concern (MEC) or unexploded ordnance (UXO) contamination, the UXO team will conduct a reconnaissance and MEC/UXO avoidance to provide clear access routes to each site prior to drilling crews entering the area. The following procedures will be implemented:

Drilling operations on MEC/UXO sites will not be conducted until a complete plan for the site is prepared and/or approved by the URS

## **URS SAFETY MANAGEMENT STANDARD**

### **Drilling Safety Guidelines**

---

UXO Safety Officer. MEC/UXO avoidance must be conducted during drilling operations on known or suspect MEC/UXO sites (SMS-039).

The UXO team will identify, and clearly mark the boundaries of a clear approach path for the drilling crews, vehicles, and equipment to enter the site. This path will be, at a minimum, twice the width of the widest vehicle. No personnel will be allowed outside any marked boundary.

If MEC/UXO is encountered on the ground surface, the UXO team will clearly mark the area where it is found, report it to the proper authorities, and divert the approach path around it.

The UXO team will conduct an access survey using the appropriate geophysical instrument over the approach path for avoidance of MEC/UXO that may be in the subsurface. If a magnetic anomaly is encountered, it will be assumed to be MEC/UXO and the approach path will be diverted around the anomaly. UXO personnel only will operate the appropriate geophysical instrument and identify MEC/UXO.

An incremental geophysical survey of the drill hole location(s) will be initially accomplished by the UXO team using a hand auger to install a pilot hole. If MEC/UXO is encountered or an anomaly cannot be positively identified as inert material, HTRW sampling personnel will select a new drill hole location.

Once a drilling site has been surface cleared and a pilot hole established as described above, the drilling contractor will be notified that the site is available for subsurface drilling.

Additional guidance for MEC/UXO support during drilling activities is provided in URS SMS 039.

## **K. Protective Gear**

### **1. Minimum Protective Gear**

Items listed below should be worn by all staff working within 30 feet (10 meters) of drilling activities.

Hearing Protection;

Hard Hat;

Eye Protection (safety glasses, goggles, or face-shield)

Safety Shoes (shoes or boots with steel toes)

## **URS SAFETY MANAGEMENT STANDARD**

### **Drilling Safety Guidelines**

---

#### **2. Other Gear**

Items listed below should be worn when conditions warrant their use. Some of the conditions are listed after each item.

**Safety Harnesses and Lifelines:** Safety harnesses and lifelines shall be worn by all persons working on top of an elevated derrick beam or mast. The lifeline should be secured at a position that will allow a person to fall no more than six feet (2 meters). OSHA Fall Protection (1926 Subpart M) requirements apply.

**Life Vests:** Use for work over water.

#### **5. Resources**

- A. International Association of Drilling Contractors Safety Alerts  
<http://iadc.org/alerts.htm>
- B. Fall Protection - SMS 040
- C. Hearing Conservation - SMS 026
- D. Subcontractor Health and Safety Requirements - SMS 046
- E. Utility Clearances and Isolation - SMS 034
- F. Munitions Response / Munitions and Explosives of Concern - SMS 039
- G. Environmental Remediation Drilling Safety Guideline

# **URS SAFETY MANAGEMENT STANDARD**

## **Electrical Safety**

---

### **1. Applicability**

This program applies to URS field operations in North American where electricity is used, electrical systems are installed or maintained, or where live electrical circuits are accessed. For work around overhead or underground utilities, see SMS 34, "Utility Clearances".

### **2. Purpose and Scope**

This procedure describes requirements for working on electrical circuits with voltage greater than 50 volts. The primary hazards related to electricity are shock, burns, arc-blast, fire and explosions. This procedure is intended to reduce worker risk to electrical hazards.

### **3. Implementation**

Office Locations - Implementation of this program is the responsibility of the Office Manager.

Field Activities - Implementation of this program is the responsibility of the Project Manager.

### **4. Requirements**

A. Any work performed on live electrical systems must be done by a licensed or journeyman electrician.

B. Follow established lockout/tagout procedures. Refer to SMS 23, "Lockout and Tagout Safety".

1. Consider all electrical systems as live until verified de-energized and grounded.

2. Do not work on or in close proximity to electrical circuits unless the circuit is de-energized, grounded or guarded.

C. Hazardous Locations

Determine if electric equipment and wiring will be installed in locations that are classified depending on:

1. The properties of flammable vapors, liquids or gases, or combustible dusts or fibers that may be present; as well as the likelihood that a flammable or combustible concentration or quantity

## **URS** SAFETY MANAGEMENT STANDARD **Electrical Safety**

---

is present. Refer to Attachment 12-1 for definitions of hazardous locations.

2. Consult Resources A, B, F, and G for information on working in classified locations.

### D. Ground Fault Circuit Interrupters and Grounding

#### 1. Ground Fault Circuit Interrupters

- a. Provide approved ground-fault circuit interrupters for all 120-volt, single phase, 15- and 20-ampere receptacle outlets on construction sites.
- b. Provide ground-fault circuit interrupters for all 120-volt, single phase, 15- and 20-ampere receptacle outlets within garages, bathrooms, kitchens and shops.

#### 2. Grounding/Earthing

Effectively ground all wiring, electrical circuits, and equipment, except portable tools & appliances protected by an UL-approved system of double insulation. Examples of equipment requiring grounding include:

- a. Portable and vehicle or trailer mounted generators.
- b. Electrically powered arc welders.
- c. Switches.
- d. Motor controller cases.
- e. Fuse boxes.
- f. Distribution cabinets.
- g. Frames.
- h. Non-current-carrying rails used for travel and motors of electrically operated cranes.
- i. Electric elevators.

## **URS** SAFETY MANAGEMENT STANDARD

### **Electrical Safety**

---

- j. Metal frames of non-electric elevators to which electric conductors are attached.

#### E. Circuits

- 1. Require that there are no missing blanks.
- 2. Close doors to circuit and fuse boxes when not in use.
- 3. Label every circuit located on a circuit breaker/fuse box and/or motor control center (MCC).

#### F. Temporary Wiring, Electrical Tools and Extension Cords

- 1. Require that temporary wiring is installed and used in accordance with references. Specifically:
  - a. Guard, bury or isolate by elevation temporary wiring to prevent accidental contact by workers and equipment.
  - b. Require that vertical clearance above walkways is not less than 10 feet (3 metres) from circuits carrying 600 volts or less.
  - c. Support all exposed temporary wiring on insulators.
  - d. Protect temporary wiring from accidental damage.
  - e. Guard live parts of wiring.
  - f. Mark temporary power lines, switch boxes, receptacle boxes, metal cabinets and enclosures around equipment to indicate the maximum operating voltage.
- 2. Require that lighting strings are installed and used in accordance with Resources A and B. Specifically:
  - a. Use nonconductive lamp sockets and connections permanently molded to the conductor insulation.
  - b. Require that lighting strings have lamp guards.
  - c. Replace all broken or defective bulbs promptly.

## **URS SAFETY MANAGEMENT STANDARD**

### **Electrical Safety**

---

- d. Protect all lights used for illumination from accidental contact or breakage.
  - e. Ground metal-case sockets.
- 3. Require that extension cords are installed and used in accordance with Resources A and B. Specifically:
  - a. Use only 3-wire grounded type extension cords designated for hard service or extra hard service and listed by Underwriters Laboratories, Inc.
  - b. Check cords for damage before use.
  - c. Do not exceed the rated load.
  - d. Do not use spliced cords.
  - e. Destroy and discard worn or frayed cords.
  - f. Do not fasten extension cords with staples, hang them by nails or suspend them by wire.
  - g. Do not wrap cords or cables around any conductive materials.
- 4. Require that portable electric tools brought onto the site are in good condition. Before use on any shift, visually inspect portable cord and plug connected equipment for external defects and evidence of possible internal damage.
- G. Report to supervision potential electrical hazards or unexpected occurrences while electrical renovation or construction occurs.
- H. Keep accurate records of all pertinent work performed on a project.
  - 1. Keep as-built designs updated.
  - 2. Share information on modifications with contractors on site.
- I. Isolation of live electrical components

Isolate all live, unprotected electrical components through the use of barricades, fencing or other means to protect employees from contact.

## **URS SAFETY MANAGEMENT STANDARD**

### **Electrical Safety**

---

#### J. Briefing

1. Brief workers on electrical hazards at the beginning of the job. Utilize Attachment 12-2 as a guide for proper PPE as applicable.
2. Brief new workers entering the site.
3. Brief workers when electrical conditions change or when hazards exist.

#### K. Inspection

Inspect the job site periodically using Attachment 12-3 to evaluate compliance with this standard.

### **5. Documentation Summary**

#### Project Safety Files

- A. Licensed/journeyman electrician for project (as necessary).
- B. Attachment 12-3, "Audits."
- C. Documented communications between URS, contractors, licensed/journeyman electricians, or others.

### **6. Resources**

- A. U.S. OSHA Standard - General Industry Electrical Safety - 29 CFR 1910, Subpart S
- B. U.S. OSHA Standard - Construction Electrical Safety - 29 CFR 1926, Subpart K
- C. U.S. OSHA Standard - Design Safety Standards for Electrical Systems - 29 CFR 1910, Subpart S
- D. U.S. OSHA Standard - The Control of Hazardous Energy (Lockout/Tagout) - 29 CFR 1910.147
- E. Australian Standards SAA HB94-1997 - Electrical Safety in the Workplace
- F. American National Standards Institute/Institute of Electrical and Electronics Engineers - National Electrical Safety Code (NESC), ANSI/IEEE C2-2002

## **URS** SAFETY MANAGEMENT STANDARD **Electrical Safety**

---

G. National Fire Protection Association, National Electric Code, NFPA-70

The following documents are PDF files requiring the use of Adobe Acrobat reader.

H. Attachment 12-1 - Hazardous Locations

I. Attachment 12-2 - PPE, Tools and Equipment

J. Attachment 12-3 - Electrical Hazard Check Sheet

## **URS SAFETY MANAGEMENT STANDARD**

### **Fire Prevention**

---

#### **1. Applicability**

This procedure applies to URS office and project locations.

#### **2. Purpose and Scope**

The purpose of this procedure is to reduce/eliminate potential fire hazards in the workplace and to provide for a rapid, effective response should a fire occur.

#### **3. Implementation**

Office Locations – Implementation of this procedure is the responsibility of the Office Manager.

Field Activities – Implementation of this procedure is the responsibility of the Project Manager.

#### **4. Requirements**

##### **General**

- A. Develop an Emergency Action Plan as outlined in SMS 3, "Emergency Action Plans."
- B. Maintain good housekeeping to reduce fire hazards and to provide safe routes of egress should a fire occur.
- C. Provide the appropriate number and types of fire extinguishers for the operations being performed. Refer to Attachment 14-1 for guidance.
- D. Inspect fire extinguishers monthly and maintain an inspection log.
- E. Conduct frequent periodic inspections to identify fire hazards such as:
  - 1. Unnecessary accumulation of combustibles.
  - 2. Unnecessary storage of flammables.
  - 3. Sources of ignition (e.g., faulty wiring, sparks, open flame, etc.).
- F. Remove all fire hazards promptly.
- G. Prohibit smoking and other ignition sources in flammable storage and other fire hazard areas.

## **URS SAFETY MANAGEMENT STANDARD**

### **Fire Prevention**

---

- H. Post emergency numbers near telephones and evacuation maps in appropriate locations.
- I. Conduct evacuation drills.
- J. Train employees in:
  - 1. Fire hazard recognition.
  - 2. Fire hazard prevention.
  - 3. Fire extinguisher use.
  - 4. Emergency and evacuation procedures.

#### **6. Documentation Summary**

File the following in the Office/Project Health and Safety File:

- A. Emergency Action Plans.
- B. Fire extinguisher inspection logs.
- C. Employee training documentation.
- D. Site audits.
- E. Evacuation drills.

#### **7. Resources**

- A. U.S. OSHA Standard - Means of Egress - 29 CFR 1910, Subpart E
- B. U.S. OSHA Standard – Exit Routes, Emergency Action Plans, and Fire Prevention Plans - 29 CFR 1910.38
- C. U.S. OSHA Standard - Fire Protection - 29 CFR 1910, Subpart L
- D. U.S. OSHA Technical Links - Fire Safety
- E. U.S. OSHA Construction Standard - Fire Protection and Prevention 29 CFR 1926, Subpart F
- F. U.K. Statutory Instrument 1997 No. 1840 - Fire Precautions (Workplace) Regulations

**URS** SAFETY MANAGEMENT STANDARD  
**Fire Prevention**

---

- G. Australian Standards AS 1851.1-1995 - Maintenance of Fire Protection Equipment - Portable Fire Extinguishers and Fire Blankets
- H. USACE EM 385-1-1 Section 9 - Fire Prevention and Protection
- I. Attachment 14-1 - Fire Extinguisher Placement Guidelines

# **URS SAFETY MANAGEMENT STANDARD**

## **Flammable and Combustible Liquids and Gases**

---

### **1. Applicability**

This procedure applies to URS office and field operations where flammable and combustible liquids and gases are stored or used.

### **2. Purpose and Scope**

The purpose of this procedure is to provide information regarding the proper storage, handling and work practices associated with flammable and combustible liquids and gases.

### **3. Implementation**

Office Locations- Implementation of this program is the responsibility of the Office Manager.

Field Activities- Implementation of this program is the responsibility of the Project Manager.

### **4. Requirements**

#### **A. Appoint a Responsible Person who will:**

1. Inspect storage areas periodically.
2. Monitor the quantity of flammable and combustible liquids and gases on the site.
3. Review work practices.

#### **B. Control flammables, combustibles, and flammable gases entering the site.**

1. Order only those materials and quantities that are needed to complete a job.
2. Check compliance with SMS 2, "Worker Right to Know".

#### **C. Storage**

1. Store flammable and combustible materials in appropriate tanks and containers. See Attachment 15-1.
2. Limit building storage outside of a flammable storage cabinet or storage room per Attachment 15-1.

## **URS SAFETY MANAGEMENT STANDARD**

### **Flammable and Combustible Liquids and Gases**

---

3. Store oxidizers separately from flammables.
4. Segregate gas cylinders for storage based on their hazard. Keep oxygen and acetylene cylinders stored separately.

#### **D. Labeling and Signage**

1. Post a "NO SMOKING OR OPEN FLAME" sign in all areas where flammable and combustible materials are stored, handled, and processed.
2. Require all containers and cylinders to be labeled with the contents and hazard-warning label per SMS 002.

#### **E. Use of Materials on Site**

1. Use flammable, combustible, and compressed gases in a manner that is consistent with the label and material safety data sheet for the product.
2. Use only those amounts of materials needed for the job. Transfer of flammables, combustibles, oxidizers to ready use containers is encouraged.
3. Use personal protective equipment stated on the product label and material safety data sheet.

#### **F. Spill Control**

1. Have a written spill response plan in place before materials are stored on site.
2. Clean up or respond to spills promptly.

#### **G. Disposal**

1. Keep solvent waste and flammable liquids in fire resistant, covered containers until they are removed from the worksite.
2. Do not place flammable or combustible waste in municipal garbage.
3. Dispose of flammable hazardous materials with a licensed hazardous material disposal company.

#### **H. Inspection**

## **URS SAFETY MANAGEMENT STANDARD**

### **Flammable and Combustible Liquids and Gases**

---

1. Periodically inspect flammable and combustible storage and use areas, gas storage areas and oxidizer storage areas:
  - a. Office settings inspect quarterly.
  - b. Field-related projects inspect monthly.
2. Use the inspection sheet provided as Attachment 15-2 to inspect the storage areas.

#### **I. Training**

Require that Hazard Communication training includes specific hazard information for the flammables, combustibles and oxidizers used.

### **5. Documentation Summary**

- A. File these records in the Office Safety Filing System:
  1. Location of the MSDS inventory.
  2. Completed Flammable and Combustibles Inspection Checklist.
- B. File these records in the Project Safety Filing System:
  1. Attach program to Project Health and Safety or Safe Work Plan.
  2. File these records in the Project Safety File.
    - a. Location of the MSDS inventory
    - b. Completed Flammable and Combustibles Inspection Checklist.

### **6. Resources**

- A. National Fire Protection Association - Standard 58
- B. Regulations of the U.S. Coast Guard
- C. U.S. OSHA Standard - Flammable and Combustible Liquids - 29 CFR 1910.106
- D. U.K. "Dangerous Substances and Explosive Atmospheres Regulations 2002"

**URS** SAFETY MANAGEMENT STANDARD  
**Flammable and Combustible Liquids and Gases**

---

- E. Australian Standards AS 1940-2004. The Storage and Handling of Flammable and Combustible Liquid
- F. Attachment 15-1 - Flammable and Combustible Liquid Classifications
- G. Attachment 15-2 - Flammable, Combustible, Oxidizer & Compressed Gas Inspection Sheet.

# **URS** SAFETY MANAGEMENT STANDARD

## **Hazardous Waste Operations**

---

### **1. Applicability**

This standard applies to URS field operations involving the investigation or remediation of sites impacted with hazardous wastes or hazardous materials including those associated with underground storage tanks.

Investigation projects for real estate transactions conducted to confirm that a site is "clean" are not covered under this standard. Reference related Safety Management Standards for such operations.

### **2. Purpose and Scope**

The purpose of this standard is to provide guidance designed to minimize hazardous chemical exposures to URS personnel while URS is conducting hazardous waste field operations.

Investigation techniques included under this standard include, but are not limited to, hand auger, soil gas evaluation, test pits, and all types of power drilling, including direct push. Remediation techniques included under this standard include, but are not limited to, excavation, groundwater treatment, soil gas treatment, containment, and landfarming and similar in-situ methods.

### **3. Implementation**

Field Activities - Implementation of this procedure is the responsibility of the Project Manager or Superintendent.

### **4. Requirements**

#### **A. Project Evaluation**

Assess the technical and field aspects of every hazardous waste site project to evaluate:

1. Risk of exposure to hazardous chemicals, with particular attention to suspected or known human carcinogens.
2. Personal protective equipment requirements.
3. Air monitoring requirements.
4. Emergency services requirements.
5. Hazards addressed by other URS Safety Management Standards.

## **URS** SAFETY MANAGEMENT STANDARD Hazardous Waste Operations

---

6. Logistical considerations, such as access and distance from population centers.
7. Other safety and health hazards associated with site operations.

### B. Client/Contract Evaluation

1. Review contract documents to determine whether the client has any special internal or regulatory requirements for hazardous waste site operations.
2. Implement client requirements in addition to those of this standard. Those requirements that are the most protective (e.g., most stringent) will be used.

### C. Site-specific Health and Safety Plan

1. Prepare a site-specific Health and Safety Plan (HSP) for every project under this standard. An HSP tool is available from the URS HSE website.
2. HSPs must be written or reviewed by a URS Regional Health, Safety, and Environment Manager (RHSEM) or a safety professional specifically approved by the RHSEM.
3. Evaluate client and agency requirements prior to preparing the HSP, particularly if the client or an agency will approve the HSP prior to implementation.

### D. Training

Verify that each assigned URS employee has completed required training.

For operations outside of North America, the normal requirement is 24 hours of initial training and annual refresher training of 4 to 8 hours.

In general, the following are required for operations within North America:

1. 40-hours of initial training from an approved training provider.
2. 3-days of on-the-job training.

## **URS** SAFETY MANAGEMENT STANDARD **Hazardous Waste Operations**

---

3. 8-hours of refresher training completed within 12 months of the initial or subsequent refresher training.
4. 8-hours of Site Safety Officer (Supervisor) training for directing the activities of any other URS employee.
5. Additional training for the Site Safety Officer as described below.

### **E. Site Safety Officer**

1. Appoint a Site Safety Officer (SSO) with appropriate qualifications for the specific hazardous waste project.
2. Assure that the SSO for complex projects, such as those with complicated remediation activities, has no duties other than site safety and health.
3. Verify that the SSO has completed basic supervisor training, and has additional required training and experience as applicable:
  - a. Advanced respiratory protection training is required for projects where supplied air respirators may be used.
  - b. Heavy equipment/construction safety.
  - c. Personal air monitoring.

### **F. Exposure Monitoring**

Require that exposure monitoring is conducted in accordance with the HSP on all hazardous waste projects.

### **G. Project Equipment**

1. Provide all health and safety equipment as described by the project HSP.
2. Provide all personal protective equipment as described by the project HSP.

### **H. Medical Surveillance**

Verify that each URS employee assigned to the project meets the minimum requirements of the URS Medical Surveillance Program (refer to SMS 024). This typically includes:

## **URS SAFETY MANAGEMENT STANDARD**

### **Hazardous Waste Operations**

---

1. Baseline examination.
  2. Annual examination.
  3. Appropriate clearance for respirator use.
- I. Attachment 68-3, Hazardous Waste Site Evaluation is a tool for use in determining the effectiveness and compliance of a waste site operation.

#### **5. Documentation Summary**

In the Project Safety File:

- A. Completed Health and Safety Plan.
- B. Completed and signed HSP approval form.
- C. Signed HSP acceptance form.
- D. Completed H&S field forms that are included in each HSP.
- E. Training and Medical Surveillance Clearance documentation for project personnel.

#### **6. Resources**

- A. U.S. OSHA Technical Links - Hazardous Waste Operations
- B. Attachment 68-3, Hazardous Waste Site Evaluation
- C. European Agency for Safety and Health at Work, Dangerous Substances  
[http://europe.osha.eu.int/good\\_practice/risks/dangerous\\_substances/](http://europe.osha.eu.int/good_practice/risks/dangerous_substances/)
- D. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities - NIOSH 85-115
- E. USACE EM 385-1-1 – Hazardous Waste Operations and Emergency Response (HAZWOPER)

# **URS SAFETY MANAGEMENT STANDARD**

## **Hazardous Materials/Dangerous Goods Shipping**

---

### **1. Applicability**

Office and field operations that ship hazardous materials (HazMat) must follow this Hazardous Material/Dangerous Goods Shipping Program.

Hazardous materials may include, but are not limited to, compressed gases, nuclear density meters, laboratory reagents, field samples, hazardous wastes, and materials used for bench scale and pilot plant operations.

The air shipment of environmental samples represents the largest percentage of hazardous materials/dangerous goods shipped by URS. While most environmental samples (both water and soil) do not meet the definition of hazardous, extreme care must be taken to properly classify materials.

As the more stringent requirements apply to air shipments, ground shipment (e.g., use of a lab courier service) should first be considered for hazardous materials shipping.

### **2. Purpose and Scope**

This program was designed to provide a framework for compliance with the requirements of the U.S. Department of Transportation (DOT) 49 CFR and the International Air Transportation Association (IATA) for shipping hazardous materials/dangerous goods by land or air.

### **3. Implementation**

Office Locations - The Office Manager is responsible for implementing this program at company locations/facilities.

Field Activities - The Project Manager is responsible for compliance and implementation of this program at project sites.

### **4. Requirements**

#### **A. Staffing**

Each project or location must ensure that awareness and function specific trained individuals are involved in the process of preparing hazardous materials for shipment.

Each location where HazMat shipping occurs or where HazMat employees are assigned must identify a local or regional Shipping Specialist.

## **URS SAFETY MANAGEMENT STANDARD**

### **Hazardous Materials/Dangerous Goods Shipping**

---

URS maintains a hazardous materials/dangerous goods **shipping hotline** to provide answers to specific shipping questions.

**800-381-0664** in Canada and U.S;

**919-461-1227** for other countries.

#### **B. General Procedures**

1. Select the best way to ship the HazMat item based on the quantity, hazard(s), and mode of transportation (e.g., air, land, water).
2. Ensure package contents are compatible.
3. Package, mark, and label according to applicable regulations.
4. Complete the bill of lading or shipper's declaration for dangerous goods according to applicable regulations.
5. Follow hazard communication requirements:
  - a. Send a copy of the appropriate Emergency Response Guidebook page or material safety data sheet (MSDS) with each shipment.
  - b. Include the 24-hour emergency response phone number (CHEMTREC 800-424-9300 domestic, 703-527-3887 international) on the shipping paperwork.

#### **C. Placarding Requirements**

1. "Limited quantities" are excepted from placarding.
2. URS staff will not transport quantities of material requiring a placard.

#### **D. Training**

1. Require employees who package, prepare paperwork, load and/or unload, and transport hazardous materials be trained to the appropriate level of activity:
  - a. Training is required prior to performing HazMat shipping activities.

## **URS** SAFETY MANAGEMENT STANDARD **Hazardous Materials/Dangerous Goods Shipping**

---

- b. Training is required when regulatory changes impact current procedures and every 2 years.
- c. General awareness training is required for everyone who is involved in HazMat shipping. An on-line hazardous materials awareness course is available via the training section of the soURSe and is included in HAZWOPER refresher training. This training includes:
  - 1. Recognizing hazardous materials
  - 2. Penalties for not complying
  - 3. Basic regulatory requirements
- d. Regional or local shipping specialists must complete a 2-day hazardous materials/dangerous goods shipping course conducted by URS or complete an outside equivalent course.
- e. Driver's may be exempt from function specific training if the DOT's Materials of Trade (MOT) exception applies to the shipment. (See Attachment 48-1 for information on this exception).

### **E. Special Requirements**

- 1. Some countries and transporters have more stringent requirements than DOT or IATA. For example, the United Parcel Service (UPS) publishes its own Guide for Shipping Ground and Air Hazardous Materials. URS shipping training and this program may not meet these additional requirements.
- 2. Contact the applicable shipping company, shipping specialist, or the hotline if you are unsure or suspect there may be additional, special requirements on a shipment.
- 3. For international shipments an expeditor may be required to ensure needed materials are not held in customs. It may be advisable to purchase hazardous materials once you arrive in your destination country.

## **URS** SAFETY MANAGEMENT STANDARD **Hazardous Materials/Dangerous Goods Shipping**

---

### **5. Documentation**

All files must be kept in a central location.

#### **A. Training records**

1. Sign-up sheet with list of employee names, date, management certification.
2. Successfully completed tests.
3. Outline of course materials.

### **6. Resources**

- A. 49 Code of Federal Regulations, Parts 171-180, Subchapter C-- Hazardous Materials Regulations.
- B. Dangerous Goods Regulations. International Air Transport Association. 40<sup>th</sup> Edition. Effective January 1, 1999.
- C. *International Maritime Dangerous Goods Code*. International Maritime Organization, Amendment 29-98.
- D. DOT Office of Hazardous Materials Safety
- E. URS HazMat Shipping Support Helpline 800.381.0664
- F. Attachment 48-1 - Materials of Trade Summary
- G. Attachment 48-2 - Hazardous Materials Certificate of Registration
- H. Attachment 48-3 - Hazardous Materials Security Plan

## **URS SAFETY MANAGEMENT STANDARD**

### **Specific Chemical Hazards**

---

#### **1. Applicability**

This standard applies to US-based URS Corporation office and field operations.

#### **2. Purpose and Scope**

This standard provides guidance in controlling potential employee exposures to toxic and hazardous substances specifically regulated by OSHA. These substances include:

Asbestos	13 Carcinogens:	
Vinyl Chloride	<i>4-Nitrobiphenyl</i>	<i>4-Aminodiphenyl</i>
Inorganic Arsenic	<i>Alpha-Naphthylamine</i>	<i>Ethyleneimine</i>
Cadmium	<i>Methyl chloromethyl ether</i>	<i>beta-Propiolactone</i>
Benzene	<i>3,3'-Dichlorobenzidine</i>	<i>2-Acetylaminofluorene</i>
Coke Oven Emissions	<i>Bis-Chloromethyl ether</i>	<i>4-Dimethylaminoazobenzene</i>
1,2-dibromo 1-3 chloropropane	<i>beta-Naphthylamine</i>	<i>N-Nitrosodimethylamine</i>
Acrylonitrile	<i>Benzidine</i>	
Ethylene Oxide		
Formaldehyde		

#### **3. Implementation**

Office Locations: Implementation of this standard is the responsibility of the Office Manager.

Field Activities: Implementation of this standard is the responsibility of the Project Manager.

#### **4. Requirements**

##### **A. Identification of Hazardous Substances**

1. Prior to performing any work including; drilling, excavation, demolition, alteration, salvage, repair, restoration, welding, brazing, grinding, or other surface disturbing activities determine if any of the hazardous substances identified in section 2 of this SMS are present in the work area.

## **URS SAFETY MANAGEMENT STANDARD**

### **Specific Chemical Hazards**

---

#### B. Determine the Potential for Employee Exposure to the Hazardous Substance

1. If any of the substances are identified, conduct an exposure assessment based on the type of work to be performed to determine if employees have the potential to be exposed above any action level identified in the substance-specific regulations. This assessment must be reviewed and approved by the Regional Health and Safety Manager.
2. Include the results of the initial exposure assessment in the project/office health and safety plan and/or project/office health and safety file.

#### C. Controlling Potential Employee Exposures.

1. Where the initial exposure assessment identifies the potential for employee exposures above an established action level, develop a project/office specific program to address all required regulatory concerns for that substance(s). Completed programs and/or guidance documents are to be included in project-specific health and safety plans.
2. Attachment 50-1 provides a general checklist, to be used in conjunction with the substance-specific standard, to assure the program covers all required areas of concern.

#### D. Compliance Programs

When compliance programs are required by a specific standard, the following outline shall be utilized unless otherwise directed by the standard:

1. Description of work activities that expose personnel.
2. Equipment to be used and procedures to be followed during exposure activities.
3. Employee job responsibility and crew size during exposure activities.
4. Maintenance practices to be followed for servicing and cleaning equipment and disposing of waste.

## **URS SAFETY MANAGEMENT STANDARD**

### **Specific Chemical Hazards**

---

5. Specific instructions on how to set up engineering controls (ventilation; containment; etc.).
6. Air monitoring data from initial assessment.
7. A detailed work schedule for implementation.
8. A description of arrangements made among contractors on multi-contractor sites with respect to informing affected employees of potential exposure .
9. Name of Competent Person who will be responsible *for performing regular inspections of the job site, materials, and equipment during the job.*

The Regional Health and Safety Manager must approve all compliance programs.

#### E. Training Requirements

1. All employees with potential exposure to the substances covered by this SMS must receive appropriate training prior to performing activities that could result in exposure. This training must be performed initially, upon any substantial changes to the operation covered, and annually. In general, the training should cover the following topics unless otherwise indicated by the specific standard:

##### a. Basic Employee Training:

Regulated areas: authorizations, entrance restrictions

Signs and warnings

Container contents identification

The nature of the specific hazards

The specific operations that could result in exposure

The medical surveillance program

Personal protective equipment

Hygiene practices and procedures

Decontamination practices

## **URS SAFETY MANAGEMENT STANDARD**

### **Specific Chemical Hazards**

---

Emergency practices and procedures

Employee's specific role in emergency procedures

Recognition and evaluation of potential hazardous situations

Employee's specific duties and responsibilities

First aid procedures

b. Supervisor Training (in addition to basic employee training):

Operations reports required

Incident reports required

Medical surveillance program

Medical examinations

Records keeping

Training program and outline

2. All training performed as part of this SMS will be documented and tracked in accordance with SMS 055.

## **5. Documentation Summary**

A. File these records in the Office Safety Filing System:

1. Hazardous substance list.
2. Approved exposure assessment.
3. Completed "Toxic and Hazardous Substance Checklist" (Attachment 50-1) along with any required guidelines and/or programs.
4. Approved Compliance Program
5. Training Records

B. File these records in the Project Safety File:

1. Hazardous substance list.

## **URS SAFETY MANAGEMENT STANDARD**

### **Specific Chemical Hazards**

---

2. Approved exposure assessment.
3. Completed "Toxic and Hazardous Substance Checklist" (Attachment 50-1) along with any required guidelines and/or programs.
4. Approved Compliance Program
5. Training Records

#### **6. Resources**

- A. Asbestos - 29 CFR 1910.1001 and 29 CFR 1926.1101  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1001.html](http://www.osha-slc.gov/OshStd_data/1910_1001.html)
- B. 13 Carcinogens - 29 CFR 1910.1003 and 29 CFR 1926.1103  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1003.html](http://www.osha-slc.gov/OshStd_data/1910_1003.html)
- C. Vinyl chloride - 29 CFR 1910.1017 and 29 CFR 1926.1117  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1017.html](http://www.osha-slc.gov/OshStd_data/1910_1017.html)
- D. Inorganic arsenic - 29 CFR 1910.1018 and 29 CFR 1926.1118  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1018.html](http://www.osha-slc.gov/OshStd_data/1910_1018.html)
- E. Cadmium - 29 CFR 1910.1027 and 29 CFR 1926.1127  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1027.html](http://www.osha-slc.gov/OshStd_data/1910_1027.html)
- F. Benzene - 29 CFR 1910.1028 and 29 CFR 1926.1128  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1028.html](http://www.osha-slc.gov/OshStd_data/1910_1028.html)
- G. Coke oven emissions - 29 CFR 1910.1029 and 29 CFR 1926.1129  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1029.html](http://www.osha-slc.gov/OshStd_data/1910_1029.html)
- H. 1,2-dibromo-3-chloropropane - 29 CFR 1910.1044 and 29 CFR 1926.1144  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1044.html](http://www.osha-slc.gov/OshStd_data/1910_1044.html)
- I. Acrylonitrile - 29 CFR 1910.1045 and 29 CFR 1926.1145  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1045.html](http://www.osha-slc.gov/OshStd_data/1910_1045.html)
- J. Ethylene oxide - 29 CFR 1910.1047 and 29 CFR 1926.1147  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1047.html](http://www.osha-slc.gov/OshStd_data/1910_1047.html)
- K. Formaldehyde - 29 CFR 1910.1048 and 29 CFR 1926.1148  
[http://www.osha-slc.gov/OshStd\\_data/1910\\_1048.html](http://www.osha-slc.gov/OshStd_data/1910_1048.html)

# **URS** SAFETY MANAGEMENT STANDARD

## **Personal Monitoring (Industrial Hygiene)**

---

### **1. Applicability**

This standard applies to URS operations where employees may be exposed to unacceptable concentrations of hazardous air contaminants.

### **2. Purpose and Scope**

This standard is intended to assist and provide guidance to URS personnel that need to conduct personal industrial hygiene monitoring

Personal monitoring is to be conducted under the following conditions:

- A. Where directed by a site-specific health and safety plan.
- B. Where employees are exposed to known or suspected human carcinogens.
- C. Where regulations require "initial exposure assessments." The only exception to conducting an "initial exposure assessment" where there is a regulatory requirement to do so is when similar exposure assessments have been conducted under similar site conditions within one year prior to the start of work on the current project.

Retain a copy of the referenced initial exposure assessment and place it in the Project Safety File.

### **2. Implementation**

Laboratory Locations - Implementation of this standard is the responsibility of the Laboratory Manager.

Field Activities - Implementation of this standard is the responsibility of the Project Manager.

### **3. Requirements**

#### **A. Procedures for Personal Industrial Hygiene Monitoring**

- 1. Collect samples using the applicable methodologies established by either NIOSH or OSHA. Require the selected laboratory to utilize the applicable analytical methodologies.

## **URS SAFETY MANAGEMENT STANDARD**

### **Personal Monitoring (Industrial Hygiene)**

---

2. Document personal monitoring activities using a URS Industrial Hygiene Monitoring Form (Attachment 43-1) and require that all Chain of Custody forms are properly completed.

#### **B. Evaluation of Personal Monitoring Results**

1. Require that the analytical results be evaluated by a URS Health and Safety Program Representative.
2. Obtain a written evaluation report from the URS Health and Safety Program Representative. If exposures exceed the Action Level and/or Permissible Exposure Limit for the air contaminant(s) of concern, a verbal report is to be made to the Project Manager immediately, and the evaluation report will include required corrective actions.
3. Evaluation reports are to be completed within five working days of the receipt of the analytical results.

#### **C. Communication of Sample Results and Evaluation**

1. Provide copies of the evaluation report to the employee(s) monitored and to employees working in the area for whom the exposures could be representative.
2. Provide a copy of the evaluation report and monitoring data to the Medical Surveillance Administrator.

#### **D. Corrective Actions**

Implement required corrective actions immediately.

### **4. Documentation Summary**

Maintain in the Project Safety File:

- A. Calibration data
- B. Completed IH Monitoring Form(s)
- C. Evaluation Report with sample results
- D. Relevant prior initial exposure assessments
- E. Provide to affected employees:

## **URS** SAFETY MANAGEMENT STANDARD **Personal Monitoring (Industrial Hygiene)**

---

Evaluation Report with sample results

F. Provide to the Medical Surveillance Administrator:

Evaluation Report with sample results

List of employees affected by the sampling

### **5. Resources**

- A. OSHA Analytical Methods
- B. OSHA Chemical Sampling Information
- C. American Industrial Hygiene Association, The Occupational Environment, Its Evaluation and Control.
- D. American Conference of Governmental Industrial Hygienists. Air Sampling Instruments for Evaluation of Atmospheric Contaminants.
- E. U.K. - 'Control of Substances Hazardous to Health'
- F. NIOSH Analytical Methods
- G. Attachment 43-1 - IH Monitoring Form

## **URS** SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

---

### **1. Applicability**

This procedure applies to all URS Corporation operations.

This Safety Management Standard (SMS) applies to employees operating motor vehicles that are owned, rented or leased by the Company, and the use of personal vehicles while on Company business.

This SMS does not apply to heavy equipment operations (see SMS 019).

### **2. Purpose and Scope**

This Safety Management Standard sets for the policies that will help URS minimize losses, injuries, and legal liabilities associated with improper vehicle use.

The Standard applies to operations world-wide. Some terminology may need to be read in context of local or national regulations for countries outside the US.

### **3. Implementation**

The overall responsibility for program implementation is with the URS Office Manager. Other responsibilities include:

- |                     |  |
|---------------------|--|
| Administration -    | Fleet management, participation in the Vehicle Safety Program, vehicle acquisition, insurance claims reporting, controlling access to vehicles, maintenance of vehicles, participating on accident review processes. |
| Human Resources -   | Documentation of driver's license annually, participation in the accident review processes.  |
| Health and Safety - | Employee safety training, maintenance of the vehicle safety program, and participation in the accident review processes.   |
| Employee -          | Familiarization with URS Vehicle Safety Program and compliance with its requirements.  |

### **4. Requirements**

#### **A. Authorized Drivers**

1. Authorized Drivers are those individuals permitted to drive URS owned, leased, or rented vehicles, and employees driving a personal vehicle for work purposes being reimbursed mileage.
2. Must be at least 18 years of age (non-commercial license) or 21 years of age (commercial license) and have a current driver's license for the appropriate class of vehicle (unless more stringent requirements are established by the leasing/renting agency).

**URS** SAFETY MANAGEMENT STANDARD  
**Vehicle Safety Program**

---

3. Human Resources / Administration will annually obtain and review a copy of the state issued drivers license for all Authorized Drivers. The Operating Unit Manager shall audit this function annually. URS employees that are Authorized Drivers shall provide a copy of their driver's license upon request. Authorized drivers who lose their license through legal action **must** notify their Human Resources Representative immediately. The Human Resources Representative will notify the Fleet Manager.
4. Authorized drivers must:
  - a. Review the Vehicle Safety Program (SMS 057) and sign the Drivers Information form (Attachment 57-2) annually.
  - b. Report any conviction for driving under the influence of drugs or alcohol to the HR representative responsible for your office or operation.
  - c. Complete vehicle safety training; URS web-based training module, or other sanctioned driving courses described in section - 4.B. Training.
  - d. Report all accidents. If the authorized driver has an accident in a URS owned, rented or leased vehicle, the accident must be reported immediately to the Office Manager. The SMS 57-1 form must be completed and submitted to the local Fleet Manager and copied to the Regional HS&E Manager (see 57-1 for reporting instructions).
  - e. Cooperate with any URS investigation concerning the accident.
  - f. Complete remedial driver safety training described in 4.B.2 as appropriate following an accident.
5. Non-URS employees (e.g., subcontractors, alliance partners) may operate URS vehicles only when this activity is specifically agreed to in the applicable contract, and only within the parameters of the contract and project plans.
6. URS operations or offices that plan vehicle use that requires compliance with Federal motor carrier regulations, the affected Office Manager must obtain approvals from the URS Health and Safety Director and the URS Fleet Manager. This requirement typically applies to vehicles with a gross vehicle weight over 10,000 pounds or vehicles used for hazardous materials transport. The driver must have an appropriate commercial driver's license and may be subject to medical surveillance (see SMS 24).

## **URS** SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

---

7. Only Authorized Drivers can be reimbursed mileage for the use of their person vehicle on company business. Requests for reimbursements for mileage by non-designated drivers shall be denied.

### B. Training

1. Authorized Drivers shall be provided basic driver safety training, including a review of the URS Vehicle Safety Program (SMS 057) and the on-line training, within 6 months of the effective date of this SMS or within 3 months of their hire date. Other training may be substituted for the on-line training if approved by the URS Regional Health and Safety Manager. Alternative training may include commercially available driver safety videos, presentations by local law enforcement officers, or training by the URS Regional Health and Safety Manager.
2. Additional training is required for employees that have been involved in a vehicle accident where \$2,000 in damages was sustained or when the accident includes a police citation. This additional training will be in the form of a 4-hour web-based training provided through the National Safety Council. The site is located at <http://www.safetyserve.com/urscorp>. Use **URSDDC** as the access code.
3. All Authorized Drivers who drive permanently assigned URS owned or leased vehicles are required to complete the 4-hour National Safety Council web based training at the web site in the above paragraph.

### C. General Operating Policy and Procedure (Applies to Authorized and Non-Authorized Drivers Operating Motor Vehicles on Official Company Business)

1. Only properly licensed employees who are specifically authorized to drive Company vehicles may operate company owned/rented/leased motor vehicles.
2. Authorized drivers required to operate vehicles with special hazards (i.e. trucks carrying fuel cells, vehicles used to tow trailers, vehicles with limited visibility, etc.) shall be thoroughly briefed on the hazards and control measures necessary for safe operation of the vehicle. The local office shall maintain documentation of the briefing.
3. Drivers/operators shall know and obey all federal, state and local motor vehicle laws applicable to the operation of their vehicle.
4. A driver shall not permit unauthorized persons to operate a URS owned/rented/leased vehicle.
5. URS policy regarding reimbursement and insurance coverage requirements for use of personal automobiles may be found in the Policy and Procedures Manual (Section 074.020). Only Authorized Drivers may be reimbursed mileage for the use of a personal vehicle.
6. All cargo extending 4 feet or more beyond the end of a truck, trailer or similar vehicle shall be clearly marked with a red warning flag or cloth measuring no less than 16 inches square. Red lights must be used at night.

## **URS** SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

---

7. Company owned/rented/leased vehicles are for official business use only and are not to be used for personal activities without the specific approval of a Division Manager, Senior Vice President, or the URS Fleet Manager.
8. Seat belts and shoulder harnesses (occupant restraint systems) shall be worn or used whenever the vehicle is in operation. The vehicle may not move until all passengers have fastened their restraints.
9. When parking or leaving a vehicle, the following procedures must be followed: Shut off the engine, engage the transmission in park (automatic transmission) or first gear (standard transmission), set the parking brake, remove the ignition keys, and lock the vehicle.
10. The vehicle's engine is to be turned off during refueling. Smoking or cell phone use is not allowed while refueling.
11. Drivers/operators will not drive or operate vehicles while under the influence of alcohol or illegal drugs. Further details on the URS Substance Abuse Policy may be found in the Policy and Procedure Manual (section 034.030).
12. Drivers/operators will not drive or operate vehicles while under the influence of medications when told by a physician, another healthcare provider, or the manufacturer (i.e. instructions on the label) that the activity is unsafe.
13. Vehicle operators are responsible for any fines levied by law enforcement agencies for the operation of their vehicles.
14. Driver/operators may not deactivate or muffle any backup warning device.
15. Distractions while driving are a major cause of accidents. Distractions include the use of cellular phones, eating, and engaging in intense conversations. URS Authorized drivers must exercise proper control of the vehicle at all times, including the management of possibly distracting actions and behaviors. The use of hands-free devices for the cell phones is required. If you need to make a call on a cell phone, have a colleague dial the number or pull over and park in a safe area. If you have to eat, pull over and park. If you become engaged in an intense conversation to the point of distraction, pull over and park or end the conversation.

### **D. Field Site Vehicle Safety**

1. Define specific vehicle travel routes and parking areas at field sites. Use fencing, cones or other markings to define roads and parking. [SMS 32](#) provides additional information on Work Zone Traffic Control.
2. If parking on the shoulder of an active road, park as far off the road as possible.
3. If work is required alongside an active road (e.g., surveying) park the vehicle behind the area of work to provide a barrier against out-of-control vehicles.
4. URS will not transport DOT-placard quantities of hazardous materials. However, small quantities of hazardous materials (e.g., sample coolers)

## **URS** SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

---

may be transported if properly packaged. Be careful to prevent chemical contamination of the vehicle. Further details on DOT shipping may be found in the DOT Shipping SMS 048.

5. Nuclear density meters (e.g., Troxler units) may be transported only by employees who have been trained in the use of nuclear density meters (see SMS 044). Nuclear density meters must be secured from movement and locked during transport. NRC and state-specific regulations regarding transport documentation also apply.
6. When performing fieldwork requiring the blocking of traffic lanes (e.g., bridge inspection), follow URS SMS 032, the Manual on Uniform Traffic Control Devices for Streets and Highways (ANSI D6.1) and local police requirements for barriers, cones, and flaggers.
7. No employee may ride in the bed of a pickup truck unless seating and restraints are provided for this specific use.
8. Articles, tools, equipment, etc. placed in vehicles shall be stored as not to interfere with vision or the proper operation of the vehicle in any way. This also includes preventing items from flying about or out of the vehicle during sudden stops, turning, etc.
9. Trucks or vehicles with obstructed rear-view mirrors must observe the following procedures when backing up: Position an employee to act as a spotter at the rear of the vehicles, in the driver's line of sight, to ensure that the area behind the truck is clear. If no other employee is present, then the driver must step out of the vehicle and check the area behind the vehicle before backing up. As an added precaution, avoid backing up whenever possible.

### **E. Accident Response and Reporting**

1. In case of injury, call or have someone else call, 9-1-1 immediately for emergency assistance. If you are involved in an accident and are not injured, do the following:
  - a. Protect the accident scene.
  - b. Do not admit liability or place any blame for the accident.
  - c. Provide only your name, address, driver's license number, and vehicle insurance information.
  - d. Obtain the following:
    - i. name(s), addresses, and telephone number(s) of the owner
    - ii. driver and occupants of other vehicle(s)
    - iii. the owner's insurance company
    - iv. driver's license number
    - v. year, make, model and license number of the vehicle(s)
    - vi. name(s) and addresses of any witnesses

## **URS** SAFETY MANAGEMENT STANDARD Vehicle Safety Program

---

e. **DO NOT:**

Call the insurance company; the Fleet Manager's office will do this (unless the incident involves your personal vehicle).

Give a statement to the press.

Give a signed statement to the claims adjuster representing the other driver's insurance company.

**NOTE:** The Auto Claim Report (Attachment 57-1) for Company-leased or owned vehicles is located in the vehicle glove compartment. The driver must complete this form at the scene of the accident and submit it to management along with a copy of the most recently submitted SMS 57-2 Driver's Information form.

2. Notification

All accidents with a Company-leased, rented, or owned vehicle must be reported to your Office/Branch Manager/Supervisor and Regional HS&E Manager and local Fleet Manager within 24-hours of the time it occurs. Use the Auto Claim Report (Attachment 57-1) for this purpose. The Fleet Administrator will report the accident to the insurance carrier (leased and owned vehicles only) promptly.

F. Accident Review

1. A violation of the policy in this Vehicle Safety SMS is subject to disciplinary action up to and including termination. The Fleet Manager will review all accidents involving URS-owned, rented or leased vehicles.
2. The Company may suspend the privilege to operate vehicles on Company business due to non-compliance with the URS Vehicle Safety Program, involvement in a motor vehicle accident, or resulting citations or other legal actions associated with motor vehicle violations. Personnel authorized to suspend an employee's status as an Authorized Driver include:
  - a. A Project Manager with responsibility for dedicated vehicles on a site. The suspension is applicable to those site vehicles only.
  - b. A URS Operations Manager responsible for the employee.
  - c. The URS Fleet Manager.
  - d. The URS Health and Safety Director.
3. The employee's driving privileges **will be** suspended for any of the following:
  - a. Accidents or legal action involving alcohol or drug use (e.g., DUI).

## **URS** SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

---

- b. Driving without a license.
  - c. Hit-and-run driving / leaving the scene of an accident.
  - d. Unauthorized use of Company vehicles (i.e. using a company vehicle for moving personal items, carrying passengers who are not associated with work activities, etc...).
- 4. The employee's driving privileges **may be** suspended for any of the following:
  - a. Two or more accidents involving the same Authorized Driver within a 12 month period
  - b. Multiple speeding tickets or multiple citations for violations of the motor vehicle code.
  - c. Multiple complaints from other employees or members of the public about driving performance.
  - d. Any accident caused by a URS Authorized Driver where damages exceed \$2,000.
- 5. An Authorized Driver's driving privileges may be reinstated if:
  - a. For any suspension resulting from law enforcement agency legal action involving drugs and alcohol on the part of the former Authorized Driver-- the driving privileges may be reinstated only by concurrent agreement from the Operating Unit Manager, the URS Fleet Manager, the URS Health and Safety Director, and the appropriate Human Resources Regional Manager.
  - b. For those Authorized Driver's privilege suspensions that are not related to driving under the influence of drugs or alcohol, privileges may be reinstated with concurrent agreement by the URS Operating Unit Manager and the URS Health and Safety Director upon completion of required remedial training (see section 4.B.2 of this SMS).
- 6. Disciplinary action includes possible:
  - a. Loss of URS driving privileges
  - b. Additional driver safety training (required for accidents resulting in more that \$2,000 in damages – optional for all other accidents).
  - c. Suspension without pay
  - d. Termination

## **URS** SAFETY MANAGEMENT STANDARD **Vehicle Safety Program**

---

### G. Inspection

1. The driver is responsible for inspecting the vehicle prior to use and not driving a vehicle with obvious safety defects.
2. Basic safety checks must include:
  - a. Tire condition/pressure
  - b. Lights/turn signals
  - c. A clean windshield and adequate window washer fluid
  - d. Gauges/warning lights indicating a normal condition
  - e. Mirrors properly adjusted
  - f. Brakes with adequate pedal pressure for proper braking
  - g. Any defects must be reported to the local office Fleet Representative/Office Administrator.
  - h. Vehicle Maintenance
  - i. The Office Administrator (or designee) is to ensure that all URS-leased/owned vehicles are properly maintained.
  - j. Routine maintenance must be performed in accordance the schedule provided in the owner's manual stored in the vehicle.
  - k. Reported defects/problems with vehicles must be repaired promptly.

### 5. Documentation Summary

- A. Auto Claim Report - (Attachment SMS 57-1)
- B. Driver's Information - (Attachment SMS-57-2)

### 6. References

The following sites provide additional information to assist you:

- A. National Safety Council; Information on Defensive Driving Courses  
<http://www.nsc.org/psg/ddc.htm>
- B. AAA Foundation for Traffic Safety  
<http://www.aaafoundation.org/>
- C. 4-Hour Defensive Driver Training  
<http://www.safetyserve.com/urscorp>      password: URSDDC

# **URS SAFETY MANAGEMENT STANDARD**

## **Medical Screening & Surveillance**

---

### **1. Applicability**

This program applies to employees assigned to work environments where there is a potential for exposure to chemical, biological, and/or physical hazards. Individuals will be selected for medical screening based on regulatory standards, project health and safety plan assessments, the expected use of personal protective equipment, and client contract requirements.

### **2. Purpose and Scope**

The overall goal of this program is to prevent occupational illness and injury by early identification of exposure-related health effects before they result in disease. Medical examinations will be performed in order to determine if employees are capable of safely performing assigned tasks, to verify protective equipment and controls are effectively providing protection, and to comply with governmental regulations. Included are provisions for emergency medical consultation and treatment.

### **3. Implementation**

Office/laboratory locations – Implementation is the responsibility of the Office Manager.

Field activities – Implementation is the responsibility of the Project Manager.

Program Administration – The Occupational Health Manager (OHM) is responsible for development and administration of this program in coordination with the URS Medical Service Provider (MSP). The OHM will maintain current injury and illness data and participate with Corporate Health, Safety, and Environment (HSE) Managers in evaluation of this program. The MSP will provide board certified occupational medicine oversight for the program and will approve medical surveillance protocols.

Locations in the United States and Canada will follow all requirements of this program.

International locations will follow sections B.1, 2, 3, 5, 6, 7, and 8; G.3; and H.1 of this program.

### **4. Requirements**

A. Selection of program participants.

## **URS SAFETY MANAGEMENT STANDARD**

### **Medical Screening & Surveillance**

---

1. The Medical Surveillance Evaluation (MSE) form - SMS 24-2 provides the primary guidance for determining whether medical screening is required for an employee and the frequency of periodic exams. The MSE is to be completed by the employee and their supervisor at time of hire for any employee who may work outside an office environment and is to be reviewed for accuracy at each annual performance review. Other reviews are required whenever there is a change in job tasks.
2. Additional site/project specific biological monitoring or toxicological screening may be required in addition to this program's core exam schedule. These medical tests will be specified by the project-specific health and safety plan and will be authorized by the MSP on the exam appointment protocol. Note: See Section D.2 if employee will have an initial assignment at a HAZWOPER site.

#### **B. Types of medical screening and surveillance exams**

1. A baseline or pre-assignment baseline exam will be conducted prior to the start of work assignments requiring medical surveillance.
2. Periodic exam schedules are established by the MSP using the following criteria:
  - a. Employees performing the following types of work will receive annual exams: construction activities in the exclusion zone of HAZWOPER sites, field work activities in the exclusion zone of HAZWOPER sites for 30 or more days per year, or projects involving exposure to OSHA-regulated materials at or above established action levels.
  - b. Employees performing the following types of work will receive biennial exams: field work activities at HAZWOPER sites less than 30 days per year; waste disposal activities; non-HAZWOPER environmental sampling; chemistry laboratory, pilot plant projects, or bench scale operations for 30 or more days per year.
3. Employees currently participating in an examination program will receive exit exams when they leave their work assignment as identified in the Exit Exam Determination – SMS 24-6. In the event an employee declines the exit exam, the employee will be

## **URS SAFETY MANAGEMENT STANDARD**

### **Medical Screening & Surveillance**

---

requested to sign a Waiver of Exit Medical Surveillance Exam - SMS 24-7.

4. Department of Transportation (DOT) exams will be conducted biennially when an employee is assigned to drive a vehicle with a gross weight rating of more than 10,000 pounds or when driving a placarded vehicle of any size used to transport hazardous chemicals. DOT exam certification can be added to a routine baseline or periodic exam protocol when scheduling with the MSP.
5. When noise levels in the employee's work environment equal or exceed an 8-hour time-weighted average of 85 decibels as measured on the A-scale (dBA), annual audiograms will be performed. For employees involved in construction activities or management of construction, enrollment in this program will be required if more than 50% of their time is spent in an active construction area.
6. Individual radiation dose monitoring will be conducted as required by the site-specific health and safety plan with approval by a Radiation Safety Officer. Personal dosimetry (film badges) is typically required; however, depending on the specific radiation hazard, additional excretory monitoring or thyroid scans may be required.
7. In order to determine an employee's ability to wear a respirator, a medical evaluation will be performed before an employee is fit tested or assigned to wear a respirator.
8. Employees assigned to work environments with airborne concentrations of asbestos fibers at or above the established action level will receive asbestos-specific baseline and annual exams. Exit exams will be performed if an exam has not been performed within the past 6 month period or if an employee has medical complaints related to asbestos exposure.

#### C. Exam protocols

1. The Medical Screening & Surveillance Exam Protocol – SMS 24-3 identifies the medical exam components of this program.

#### D. Scheduling of exams

## **URS SAFETY MANAGEMENT STANDARD**

### **Medical Screening & Surveillance**

---

1. The Office or Project Manager, usually with assistance of the local HSE Representative, is responsible for contacting the MSP when baseline, exit, and project specific exams are required. The MSP maintains an employee scheduling database for tracking periodic exams and will contact the employee for scheduling the month their exam is due. These steps are detailed in the Medical Surveillance Exam Process – SMS 24-4.
2. Employees hired with an initial assignment to work at a HAZWOPER site whose work duties require passing a physical exam or who have an essential job function of wearing a respirator, will receive a job offer contingent upon passing a pre-assignment baseline exam. See HAZWOPER & Respirator Pre-assignment Baseline Exam Process – SMS 24-5.
3. In the event of an urgent business need, a temporary clearance to begin work the day of the exam may be requested at the time a baseline exam is scheduled through the MSP. The temporary clearance will be issued by the local physician and will be good for up to 14 days or until the MSP physician's final clearance is received, whichever comes first.
4. If an exam becomes due during an employee's pregnancy, it is advised to defer the exam until after delivery and the employee returns to work from family/medical leave status.

#### **E. Exam Follow Up**

1. Following each exam, the MSP will issue a physician's written opinion (Health Status Medical Report) to the local HSE Representative which will include any medical restrictions and address the employee's ability to use personal protective equipment. See Exam Follow Up Procedures - SMS 24-8.
2. The MSP will mail the exam invoice to the local HSE Representative who will approve the charge and forward the invoice to the accounts payable department for payment.
3. The MSP will mail a confidential letter detailing the results of the exam to the employee at their home address within 30 days of the exam date.

#### **F. Emergency Medical Care**

## **URS** SAFETY MANAGEMENT STANDARD

### **Medical Screening & Surveillance**

---

1. Pre-planning is essential to a prompt and proper response to a medical emergency. Site specific emergency procedures will be provided in the site Health & Safety Plan. Suggested pre-planning actions are provided in SMS 065 (Injury Case Management). See Field First Aid Kit Supply List for recommended supplies. The contents of the first aid kit shall be checked prior to being sent out to each site/project and periodically thereafter to ensure the expended items are replaced.
2. A MSP occupational physician can be reached 24 hours a day for phone consultation at WorkCare™ (1-800-455-6155).
3. A workers' compensation claim should be filed by the Human Resource Representative with AIG Claim Services (1-877-366-8423) for an injured employee who receives professional medical care or who is disabled from working beyond the initial date of injury.
5. In order to comply with OSHA reporting regulations, immediately notify the OHM or the applicable Corporate HSE Manager if there is a work-related hospitalization or death.

#### G. Medical Records

1. Medical records are maintained and preserved in confidential, locked files in the custody of the MSP for at least the duration of employment plus 30 years. Only information regarding the employee's ability to perform the job assignment will be provided to company representatives.
2. Upon request, each employee (or designated representative) will have access to the employee's medical record. Prior to the release of health information to the employee (or designated representative), a specific written consent must be signed by the employee.
3. International records (excluding the United States and Canada) will be maintained in country at the local clinic.

#### H. Program evaluation

1. The OHM and Corporate HSE Managers will evaluate this program annually and as needed. Issues to review include program efficacy and efficiency, employee satisfaction, and cost effectiveness.

## **URS SAFETY MANAGEMENT STANDARD**

### **Medical Screening & Surveillance**

---

2. The MSP will prepare an Annual Medical Trending Report specifying the number and types of exams performed and anonymous statistical exam results in group data format.
3. Each employee is mailed a Post-Exam Evaluation by the MSP. Employee feedback regarding the clinic, medical staff, and exam procedures are reviewed and corrective actions are identified and acted upon as needed.

#### **5. Documentation Summary**

The local HSE Representative will file the Medical Surveillance Evaluation and the Health Status Medical Report in the site health & safety records.

#### **6. Resources**

- A. U.S. OSHA Technical Links - [Medical Screening/Surveillance](#)
- B. [U.S. OSHA Publication 3162](#) (1999) Screening and Surveillance: A Guide to OSHA Standards
- C. Attachment 24-1 [WorkCare Medical History Questionnaire](#)
- D. Attachment 24-2 [Medical Surveillance Evaluation](#)
- E. Attachment 24-3 [Medical Screening & Surveillance Exam Protocol](#)
- F. Attachment 24-4 [Medical Surveillance Exam Process](#)
- G. Attachment 24-5 [HAZWOPER/Respirator Preassignment Baseline Exam Process](#)
- H. Attachment 24-6 [Exit Exam Determination](#)
- I. Attachment 24-7 [Waiver of Exit Medical Surveillance Exam](#)
- J. Attachment 24-8 [Exam Follow Up Procedures](#)
- K. Attachment 24-9 [Field First Aid Kit Supply List](#)
- L. SMS 8 [Asbestos Survey and Oversight Operations](#)
- M. SMS 17 [Hazardous Waste Operations](#)
- N. SMS 42 [Respiratory Protection](#)

**URS** SAFETY MANAGEMENT STANDARD  
**Medical Screening & Surveillance**

---

- o. SMS 65 Injury Case Management

## **APPENDIX C**

### **Emergency Telephone Numbers and Hospital Information**

DETREX CORPORATION  
1100 STATE ROAD  
ASHTABULA, OHIO

EMERGENCY CONTACTS

***Agency Name (and Address)***

***Telephone No.***

- Fire Department 911 or 440-997-4641
- Police Department 911 or 440-992-7172
- Ashtabula County Medical Center 440-997-6600  
2420 Lake Avenue  
Ashtabula, Ohio 44004

***URS Health and Safety Management and Field Personnel***

- Jim Anderson Project Manager 216-622-2400  
After work hours 440-315-8017  
or 440-985-1303
- Michael Koss, Jeff Berk URS Site Safety Officer 216-622-2400
- Cece Weldon Regional Health and Safety Manager 248-553-9449  
(Cell) 248-752-3405

***Environmental Protection Agency***

- Ohio EPA Emergency Response Unit 800-282-9378
- Ohio EPA 614-466-8500

## **APPENDIX D**

### **Health & Safety Incident Report Form**



**Health, Safety, and Environment**  
**SIGNIFICANT INCIDENT SUMMARY**

Attachment 66-1  
Issue Date: Sept 04

Event:		Date of Incident:	
Work Location:		Date of Review:	
Summary Prepared By:			
Summary of Incident:			
Root Cause:			
Contributing Causes:			
Physical:			
System:			
Human:			
Lessons Learned:			

## **APPENDIX E**

### **Health & Safety Plan Compliance Agreement**

**SAFETY PLAN COMPLIANCE AGREEMENT  
AND  
MEDICAL EMERGENCY CONTACT SHEET**

I, \_\_\_\_\_, have received a copy of the Health and Safety Plan for this Project. I have reviewed the plan, understand it, and agree to comply with all of its provisions. I understand that I could be prohibited from working on the project for violating any of the health and safety requirements specified in the plan.

\_\_\_\_\_  
SIGNED

\_\_\_\_\_  
Date

This brief Medical Emergency Contact Sheet will be kept in the Support Zone during site operations. It is in no way a substitute for the Medical Surveillance Program requirements of the URS Health and Safety Program. This data sheet will accompany injured personnel when medical assistance or transport to hospital facilities is necessary.

Emergency Contact: \_\_\_\_\_ Phone #: \_\_\_\_\_

Relationship: \_\_\_\_\_

Do you wear contact lenses? \_\_\_\_\_